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COMMISSIONER OF PUBLIC HEALTH

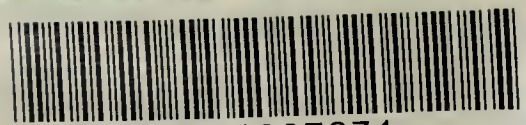
WESTERN AUSTRALIA

R E P O R T

FOR THE YEAR 1965

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REPORT
OF THE
Commissioner of Public Health
for the year 1965

Presented to both Houses of Parliament

The Honourable Ross Hutchinson, D.F.C., M.L.A.,
MINISTER FOR HEALTH



Sir,

I have the honour to submit the Report of the
Department of Public Health for the Year 1965.

WILLIAM SHARP DAVIDSON, M.B., Ch.B., D.P.H.,
Commissioner of Public Health.

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ANNUAL REPORT, 1965



The Hon. Minister for Health.

I have the honour to submit the report of the Department of Public Health for the year 1965.

Because of the unavoidable delay in submitting this report a number of items where statistics were available have included in them references to 1966.

VITAL STATISTICS

The population in 1965 rose by 2.02% to 806,189. The Birth Rate further decreased to 20.08 per 1,000 of the Mean Population. The Death Rate improved slightly to 7.78 per 1,000 Mean Population.

Maternal Mortality reached an all time low of 0.19 per 1,000 live births.

Infant Mortality rose slightly to 21.69 per 1,000 live births.

The corrected statistics show a remarkable difference between Infant Mortality in the metropolitan area compared to the rest of the State vide metropolitan 16.47, rest of State 27.45. This does not mean that medical facilities in the country are deficient to the extent indicated by the figures as in actual fact a considerable number of the country children die in metropolitan hospitals. What it does mean, however, is that Country Infant Mortality is heavily weighted by the inclusion of Part-native children and their deaths from upper respiratory tract infections to which they are prone.

To understand the position better, regarding Infant Mortality, the Table in Appendix XXIV on Causes of Infant Mortality 1964-66 should be studied.

LEGISLATION 1965

Health Act

An amendment authorises local authorities to connect premises to a sewer at cost to the owner where an order to do so is not observed.

Optometrists Act

This was amended to define optical dispensing as a craft separate from optometry and to exempt optical dispensers from the obligation to register. The amendment will not operate unless proclaimed.

Regulations

The Food and Drug Regulations were extensively amended.

PUBLIC HEALTH LABORATORIES

Dr. Laurie estimates the increase in work turned out by the Central Laboratories at 16% and of the Branch Laboratories in the country at 23% over the 1964 figures.

The Department is repeatedly asked to provide more laboratories in country areas. There are now twelve outside Perth. The requests for these laboratories are most pressing from areas with recently qualified medical practitioners.

It is clear that in modern medicine and the present day teaching of medicine, tremendous reliance is put on laboratory investigations making the practitioner, more and more dependent on the Laboratory for his diagnosis. In a State with a large number of one-doctor towns it is impossible to provide all with a laboratory. The alternative is the strategical distribution of laboratories throughout the State and improvements in the transport system of material from the doctor to these laboratories. Various means of improving transport of material are at present under investigation.

Prior to his death after a short illness Dr. Kovacs drew up an important summary of his work on the Mycobacteria and his paper was read by Dr. Ernest Runyon at the XVIIIth International Tuberculosis Conference in Munich in October, 1965. The Laboratory will continue the work undertaken by Dr. Kovacs in reference to Mycobacteria in general and the Atypical Mycobacteria in particular. The importance of the latter in human disease in Western Australia is shown in both Dr. Laurie's report and the report from the Tuberculosis Control Branch.

TUBERCULOSIS CONTROL

The number of active cases on the register continues to decline. The death rate of 1.5 per 100,000 population is the lowest recorded in Western Australia.

Few cases now appear below the age of 25 so that Compulsory Chest X-Ray will now be raised to the age of 25 and upwards in place of 21 years as now, 18 years in 1960 and 16 years in 1959.

Fare paying migrants from Britain still provide a considerable number of our new cases, and means of tracing new arrivals are far from satisfactory.

Dr. Edwards has included a report on a B. C. G. vaccination drive that took place in the Kimberleys in 1966. This was undertaken primarily because of increasing evidence that B. C. G. vaccination provides sufficient protection against leprosy to justify its universal use in endemic areas at least in the younger age groups.

Dr. Edwards describes the procedure that was adopted to vaccinate the native population of the Kimberleys between the age groups of three weeks and fifteen years.

EPIDEMIOLOGY AND SPECIAL SERVICES

Dr. Allen reports a successful year with a high vaccination rate and a record low in infectious disease preventable by vaccination.

Trachoma is still prevalent in the young native population but Dr. Allen's figures give some encouragement to the nurse teams providing treatment in the country. There is a general slow decrease in the percentage of active cases among those examined and the reduction in numbers is more marked in the older age groups. Unless however something remarkable occurs in the World regarding progress in treatment or prevention of trachoma its eradication will be a long, slow business until such time as the native population reaches a standard of sanitary and social living that is no longer favourable to the spread of infectious disease.

Venereal Disease

The one black spot in Dr. Allen's report is the increase of venereal disease and its prevalence among young persons. As he states this problem is the subject of special investigation and activity on the part of the Australian Medical Association, and its members are actively co-operating in attempts to reduce the incidence of Venereal Disease by notifying cases and trying to discover contacts from which the disease may have been acquired.

In 1918 when the treatment of venereal disease was a prolonged slow process and often ineffectual the Government of Western Australia was greatly concerned about the possibility of an epidemic of venereal disease resulting from the return home of troops from service overseas, and after much discussion and debate amendments were introduced into the Health Act to give the Commissioner extensive powers to require persons to submit to medical examination and, if necessary, to treatment.

With the advent of the sulphonamides in the late 1930's and penicillin in the early 1940's venereal disease was brought under control to a considerable extent, so that by the 1950's it looked as if gonorrhoea and syphilis might entirely disappear. The 1960's, however, have brought venereal disease right back to the forefront in importance among our infectious diseases.

When an effective remedy for an infectious disease is discovered that disease very quickly comes under control, the incidence diminishes and the disease tends to disappear, or at least no longer to be a major problem. This progression has been well illustrated in tuberculosis and it was also true of venereal disease until 1961 when surprisingly the cases began to increase and have continued to increase at an alarming rate ever since.

This increase in the incidence of the disease, despite the increased facility with which it could be treated can only be explained by the assumption that an increase has taken place in the population at risk. This increased population at risk is clearly shown in Dr. Allen's figures to be in the teenage youth and 20—24 year olds of today.

In 1958 venereal disease in the 15–19 year old group was only 6% of the total venereal disease of the population, in 1964 it was 26%, conversely in the 30–34 year old group venereal disease in the same years fell from 20% to 9% of the total in the community. Our teenagers then have become a new population at risk and are mainly responsible for the increase in the disease.

The disease is not confined to a particular social strata and therefore is not an indication of poverty nor is it a disease of the underprivileged. Its prevention, therefore, cannot be brought about by the usual methods of improved sanitary living conditions that are successful in so many other infectious diseases. Nor is there a prophylactic vaccine to banish it, like poliomyelitis, from our midst. Much has been said and written about moral and educational methods of approach to the problem but no proof of their success is yet apparent. We must therefore concentrate with every conceivable effort on effectively treating the disease where it exists, treating the disease as early as possible and, above all, finding and treating the unknown and the irresponsible carriers of the disease.

Today prostitution plays a very minor role in the spread of venereal disease. When the 1918 amendments were enacted prostitution was a major influence in the incidence of venereal disease and the Commissioner could always justifiably have "reasonable grounds to suspect" that a prostitute was carrying the infection and require her to provide him with a medical certificate to say she was free from disease. The order was willingly complied with without recrimination or heartburning. When however the Commissioner is dealing with a population which practises or pretends to practice a certain degree of morality his reasons for having "reasonable grounds to suspect" must be substantial if he is not going to inflict some psychological injury on the sensitive and possibly innocent individual.

We have however reached a stage in the growing epidemic of venereal disease when the Commissioner must be excused risking this possible upset to a few innocent persons if we are to control the spread of the disease. The Commissioner might be allowed to regard groups of persons much in the same light as we previously regarded prostitutes and consider them as persons who may reasonably be regarded as infectious until proved otherwise.

In the spreading of venereal disease "the female is more deadly than the male". The disease soon becomes apparent to the male sufferer and he seeks treatment. His number of contacts while infectious are generally limited, The female however may remain unaware that she has the disease until it reaches a late stage. By that time it may have done irreparable damage to herself and infected a large number of her sexual contacts.

Dr. Allen's tables show a rapid advance in venereal disease notifications in 1966. Of the 710 notified not less than 615 were males, the largest group being in the 20-24 year age group. Only 95 females were notified which indicates either that the female on the whole is less promiscuous or that infected females are more difficult to detect. Both these factors probably contribute to the truth. It is noteworthy that in female notifications no less than 41% of the total fell within the 15-19 year age group.

An infected youth asked to produce the name of the contact during the previous fortnight from whom he is likely to have contacted the disease, produces two closely typed pages and says "Take your pick". A teenage girl produces the same number of contacts from one evening's activity but can recall the names of only one or two.

Among young persons of this group sexuality is no longer an adventure, it is a status symbol; it has become a cult. Members of such a cult must be regarded as persons harbouring the germs of venereal disease until the contrary is proved. In other words, where the police, welfare officers or magistrates consider that persons are practising promiscuity as a cult, or behaving in a manner which would lead one to believe so, then the Commissioner should be justified in requiring proof of freedom from venereal disease in such persons.

Women who are frequent offenders against the law are often casual prostitutes. It is therefore not surprising that investigations carried out in prisons have shown a high incidence of unsuspected venereal disease.

Persons sent to prison who are habitual offenders therefore comprise another group in which freedom from infection requires to be demonstrated by adequate examination.

If members of the promiscuity cult and the casual prostitutes are required to submit to medical examination I have little doubt that venereal disease can again be brought under control. The remedy may be unpopular to many but desperate diseases need desperate remedies.

CHILD HEALTH SERVICES

31,812 infants attended Infant Health Clinics during the year. 49,286 school children were medically examined and 14,862 school children were dentally examined and, where necessary, treated.

OCCUPATIONAL HEALTH

Dr. Letham has given an extensive summary of the work of his branch.

The appointment of Dr. McNulty to this branch will be a considerable asset as his specialised knowledge and interest in pneumoconiosis will be of great assistance in trying to produce a greater protection from hazard in our most hazardous industry—the Mining Industry.

Although much has been done in these industries it is clear from the number of cases of silicosis and asbestosis still occurring that there is still a lot more to be done in the way of improved monitoring and improved dust control.

LIBRARY & TECHNICAL INFORMATION SERVICE

Over the last 17 years the library has grown from a bookshelf in the corner of the main office through a graduated expansion in rooms of various sizes to its present specially constructed accommodation.

One can read in Dr. Woolcott's report an unspoken sigh of relief that at last the library is able to function properly and his years of frustration are over for some time to come.

The work of the library and the distribution of technical information is clearly and briefly recorded in Dr. Woolcott's report which shows the extreme usefulness of the Public Health Department Library, not only to the Department but to many other departments and institutions, both inside and outside the State. This service supplied by the library is not one-sided as in return the facilities of other libraries are put at our disposal and scientific literature is made available through a system of reciprocity throughout Australia.

PHYSICS LABORATORY

The work of this Laboratory is largely concerned with the statutory requirements of the Radioactive Substances Act.

It ensures that X-Ray equipment and radioactive materials used in this State are properly designed and safely used. Monitoring of all persons likely to be in contact with radiation is carried out at the Laboratory which runs a film badge service for such persons.

The growth of industry and the increasing use of radiation in industry has increased the work of the laboratory in the prevention of radiation hazards. The activities of the Laboratory in this respect is greatly appreciated by industrialists.

There are three graduate physicist in the Laboratory of whom Mr. B. E. King is a Master of Science with specialised training in Medical Physics and Mr. L. M. Davies has just returned from England with a Master of Science degree in Health Physics. The Laboratory is therefore well equipped to give technical advice and information in the control of radiation hazards.

MATERNAL MORTALITY COMMITTEE

The Chairman, Professor King, has provided a review of the activities of this Committee since it came into existence in 1961.

Despite the tremendous decrease in maternal deaths (4.39 per 1,000 live births in 1931-1935 and 0.30 per 1,000 live births 1961-1965) the Committee still feels that 16 of the 27 deaths recorded between 1961 and 1965 could have been avoided if appropriate action had been taken by the mother or doctor and of course if the facilities were available.

The purpose of the Committee is to draw attention to defects in maternal care so that even the few deaths that still occur can be still further reduced.

Professor King's review should be read in detail to appreciate what the Committee is doing in this direction.

GENERAL SANITATION REPORT

In the Chief Inspector's Report, apart from the usual routine matters, two things are of interest.

First the increased activity in the North West and Departmental action to meet the increased needs for health inspection in that area.

The other noteworthy thing is the success meeting the activities of the Fly Control Planning Committee. In 1961/62, fly breeding was discovered in 22.3% of households examined. In 1965/66 this figure decreased to 9.4%. There is no doubt that flies in the metropolitan area are less prevalent than they were a few years ago. There are of course still too many and the work of the Committee must continue with the co-operation of local authorities and the public in general.

HOSPITAL MORBIDITY STATISTICS

The inclusion in these statistics during the past two years of the Sir Charles Gairdner Hospital and the King Edward Memorial Hospital now gives us a broad picture of morbidity to be encountered in major public hospitals. It includes Paediatrics, Obstetrics and Tuberculosis. The only thing lacking now, and it is a big omission, is the morbidity picture in private hospitals.

We can, however, at least see from the data presented what public hospitals are used for and for what they should be constructed.

It is of interest to note that the under 14's are in 1965 occupying 2.22% more beds than in 1964, and the over 70's, 2.97% less. This is some indication of the pressure of our increased child population on children's beds and also possibly some measure of the relief our new geriatric service is giving to the teaching hospitals.

Accident cases have increased and occupy 18.76% of our beds against 16.53% in 1964.

Most other figures remain remarkably stable, the daily bed average having altered by only 0.9 of an individual bed.

In 1964 the Daily Bed Average was 1360.7 and in 1965, 1359.8.

The average length of stay fell from 13.06 days to 12.76 days so that despite a slightly less daily occupancy some 700 more patients were treated.

W. S. DAVIDSON
Commissioner of Public Health

Appendix I

VITAL STATISTICS FOR WESTERN AUSTRALIA

										1963	1964	1965
Mean Population—												
Males										392,965	401,246	409,038
Females										380,270	388,978	397,151
Total										773,235	790,224	806,189
Births—												
Males										8,869	8,570	8,280
Females										8,421	8,115	7,906
Total										17,290	16,685	16,186
Birth rate per 1,000 of Mean Population										22.36	21.11	20.08
Deaths—												
Males										3,444	3,738	3,715
Females										2,532	2,691	2,559
Total										5,976	6,429	6,274
Death rate per 1,000 of Mean Population										7.73	8.14	7.78
Natural increase rate per 1,000 of Mean Population										14.63	12.98	12.29
Infant Mortality per 1,000—												
Live Births :												
Metropolitan Area										17.11	15.76	16.47
Rest of State										23.95	23.83	27.45
Whole of State										20.42	19.66	21.69
Still births :												
Metropolitan Area										90	81	89
Whole of State										178	170	181
Still births rate per 1,000 total births										10.19	10.09	11.06

Comparison of Infant Mortality and General Death Rate

Place					Infant Mortality Rate			General Death Rate		
					1963	1964	1965	1963	1964	1965
New Zealand (a)					19.6	19.1	19.5	8.81	8.80	8.68
Western Australia					20.4	19.7	21.7	7.73	8.14	7.78
New South Wales					19.9	20.3	19.1	9.19	9.58	9.28
Victoria					18.9	16.9	17.5	8.81	8.80	8.74
Queensland					20.1	19.2	17.8	8.50	9.16	8.78
South Australia					18.7	19.0	18.4	8.13	8.63	8.34
Tasmania					17.9	20.1	16.6	7.74	8.64	8.24

(a) Includes Maoris.

Appendix II

PUBLIC HEALTH LABORATORY SERVICE

ANNUAL REPORT, 1965

To the Commissioner of Public Health, Western Australia :

I. ADMINISTRATION

General

The Laboratories continue to function as a combined hospital-public health laboratory service, with responsibility for providing laboratory services to all hospitals and patients outside the Perth area and one large hospital inside the Perth area, together with laboratory facilities for the Mental Health Services.

Accommodation

Agreement has been reached in principle that a large central laboratory should be built, and finance has been provided to start this, but it is envisaged that plans will not be completed before the end of 1966, with the actual building taking 2-3 more years, by which time the problem of working space in the Central Laboratories will have reached an unworkable stage unless alternative temporary accommodation be found. Probably the best type of accommodation is that of prefabricated laboratories, which are easy to construct and easy to place on site, with the added advantage that later they may be moved to any country area requiring them.

Tours and Conferences

No important tours were undertaken during 1965. Dr. Kovacs was due to leave on a European conference just prior to his death.

One foreign technologist visited us for training in 1965, and one Australian worker also visited the Mycobacteria Laboratory for a short period of training.

Working Hours

The method of working the Laboratories remains the same, namely 14 hours daily seven days per week, with senior staff available on call during off-duty hours. Much of this extra work is due to hospital demands: it represents several thousands of pounds annually in overtime and makes heavy demands on the staff.

Character of Work

Although the work is unchanged in character there is a considerable extension in certain branches, particularly the medico-legal work not only from the country but also in the City of Perth where 70 medico-legal post-mortem examinations were carried out during the year 1965.* The police work is further increased by the need to give evidence in Court. These laboratories are recognised as licensed to train pathologists. They also act as a Mycobacteria Reference Centre for W.H.O. and for the National Health and Medical Research Council.

Increasing Demands

The work of the Central Laboratory shows much the same rate of increase as do other laboratories except for newer departments such as Cytology. The increases in the work of the country laboratories vary from moderate increases in the older country laboratories to larger increases in the work of the newer laboratories.

One serious problem still remains, namely the lack of clinical side-rooms or stem laboratories run by the junior medical staff of the hospitals. The lack of such laboratories is a significant gap in the training of junior medical staff, and has the further disadvantage that a significant proportion of laboratory results are found to be normal.

Laboratory Costs

In spite of the continued spiral in wages, salaries and equipment costs, the cost per unit of laboratory work shows a small drop compared with the present charges. In the years since the unit system of charging was first introduced the cost per unit has fallen to about 60% of the original cost.

II. STAFF CHANGES, 1965
(Including Branch Laboratories)

Position	Recruited	Resigned
Bacteriologist ....	....	1 (Dr. N. Kovacs dec'd. 25/9/65)
Pathologist-in-Charge ....	....	1 (Dr. B. G. T. Elmes)
Pathologist ....	....	1 (Dr. C. M. Bcvan)
Medical Registrar	1	....
Senior Technologist ....	....	....
Technologists	11	5
Laboratory Assistants	3	1
Laboratory Attendants	44	26
Clerks	2	2
Typists	5	4

* These are in addition to 591 post mortem examinations carried out by the District Medical Officer, Dr. A. T. Pearson.

The above table shows staff changes in 1965. The death of Dr. Kovacs was a serious loss to us, to Australia, and to the western world where he held such a well-deserved international reputation.

In addition to the loss of the Head of the Microbiology Division by death, we lost, by resignation, the Head of the Pathology Division and one other pathologist. There is a world-wide shortage of laboratory workers at present, especially medically qualified workers.

Health Problems

The health of the staff was even more satisfactory in 1965 than in 1964 in spite of a high risk of infection as compared with workers elsewhere. There is a 25% reduction in sickness to 1.34% of 39,680 man-days worked in 1965, i.e. a loss of 531 working days. Once again a few workers contributed disproportionately to the total, with 8 individuals being responsible for 131 of the days lost.

Analysis of sickness by groups shows the following :

Medical Staff, who make up 4% of the work force, accounted for 2% of the working days lost.					
Senior Technologists	„	14%	„	„	10%
Technologists	„	9%	„	„	10%
Clerical Staff	„	9%	„	„	4%
Laboratory Attendants	„	64%	„	„	74%

III. WORK DONE, 1965
1. General

General surveys and detailed surveys of work done in 1965 in the Central Laboratories and in the Branch Laboratories are tabulated in the Appendix at the end of this report, with Tables 1 (a) and 1 (b) summarising the work in the Central Laboratories and Table 1 (c) showing the work done in the individual Branch Laboratories.

In the Central Laboratories all departments showed an increase in work done in 1965 compared with that of 1964. As expected, the Cytology Department work showed the greatest increase, 33%, with a total over-all increase of 16% in the 1965 work compared with the 1964 totals.

The Branch Laboratories show the same findings. With the exception of Wooroloo, all Laboratories showed an increase in work done over the previous year, with a total over-all increase of 23%.

2. Microbiology

The work of the sections of this Division is summarised in the following tables which are shown in the Appendix.

- 2.A : Clinical Bacteriology ;
- 2.B : Waters and Sewerage Bacteriology ;
- 2.C : Enteric Diseases Laboratory ;
- 2.D : Mycobacteria ;
- 2.E : Mycology ;
- 2.F : Parasitology ; and
- 2.G : Virology.

2.A : Clinical Bacteriology

Table 2 (a) shows the work carried out in the clinical bacteriology section. A most disturbing feature is the 58% increase in tests for venereal diseases. In spite of the early promise of ascitic-fluid medium, the most satisfactory recoveries of gonococci have been made on Difco GC medium with Supplement A. A comparison between the results obtained on smear examination and culture from cases suspected of having gonorrhoea are shown in Table “A” hereunder.

Table “A”
COMPARISON OF RESULTS OF CULTURE AND SMEAR EXAMINATION FOR
N. gonorrhoea—1965

										Males	Females	Total
Smear	+	Culture	+	....	....	....	....	....	....	103	6	109
Smear	+	Culture	—	....	....	....	....	....	....	75	14	89
Smear	+	No Swab		....	....	....	....	....	....	30	5	35
Smear	—	Culture	+	....	....	....	....	....	....	4	12	16
No Smear		Culture	+	....	....	....	....	....	....	15	35	50
Total Positives										227	72	299
Smear	—	Culture	—	....	....	....	....	....	....	324	512	836
Smear	—	No Swab		....	....	....	....	....	....	28	37	65
No Smear		Culture	—	....	....	....	....	....	....	67	651	718
Total Specimens										646	1,272	1,918

Urine Testing : Further work was carried out on the bacteriological count method of determining infections of the renal tract using mid-stream specimens rather than catheter specimens. A major difficulty in this method is the necessity for the urine samples to be freshly-voided or refrigerated until examined. It was again established that a count of 100,000 organisms per ml. or greater was indicative of bacterial infection of the urinary tract. Counts up to 50,000 organisms per ml. can be regarded as of no significance.

Sensitivity Testing : During the year a study was completed which enabled standardised sensitivity testing to be carried out in all laboratories of the service. Three standard eight point multi-discs were designed. One disc covered the antibiotic sensitivity for wound swabs, pus and similar material, a second for urine, and the third for enterobacteriaceae in faeces. In addition, Evans' Sentests were made available for antibiotics not included in the multi-discs.

2.B : Water and Sewerage Bacteriology

The work done in this section during 1965 is summarised in Table 2 (b) (Appendix). Further work was initiated during 1965 on the membrane filter method for the enumeration of organisms in water supplies. Results so far are encouraging, but it will be some time before sufficient examinations have been made in parallel with a routine technique to enable the efficacy of the method to be assessed statistically.

2.C : Enteric Diseases Laboratory

The work done in this section in 1965 is summarised in Table 2 (c) (Appendix). In this tropical and semi-tropical State it is only to be expected that Shigella and Salmonella infections provide a serious hospital and public health problem. It is possible that the incidence of both types of enteric infection is underestimated, with many attacks of diarrhoea and vomiting being masked under the more socially acceptable term of " virus infection ".

Shigella : Table " B " hereunder gives details of the Shigella isolations in 1965, together with the sensitivities of the various species. It should be stressed that it is not possible to rely on unselective administration of sulpha drugs or antibiotics in the treatment of dysentery : it is essential to check the sensitivity of the particular infecting agent.

Table "B"
SHIGELLA ISOLATIONS AND SENSITIVITY RESULTS—1965

Shigella Strains	Total Cases	Total Isolations	Total Tested for Sensitivity	STRAINS SENSITIVE										
				Streptomycin	Chlorotetracycline	Oxytetracycline	Tetracycline	Chloramphenicol	Polymyxin B	Neomycin	Furoxone	Sulphadiazine	Colimycin	Ampicillin
Shigella sonnei	58	60	52	28	49	49	49	50	49	43	52	17	50	48
Shigella flexneri I	52	63	55	8	19	19	19	17	52	42	54	9	53	51
Shigella flexneri II	31	37	31	11	20	20	20	21	30	26	30	...	31	29
Shigella flexneri V	11	13	11	....	2	2	2	1	11	7	10	....	11	9
Shigella schmitzii	53	58	46	....	43	42	42	46	45	31	46	2	46	42
Total	205	231	195											

Salmonella : Table " C " hereunder shows the Salmonella species identified during 1965. Compared with the number of specimens tested, the species present is one of the most varied anywhere reported, and preliminary studies indicate that multiple strains may be harboured by men and by animals in Western Australia, particularly in the North.

Enrichment Medium : Work on a comparative trial of Rappaport enrichment medium and standard media was almost completed. In brief, this investigation showed that while Rappaport broth was of no value in the isolation of *Salmonella typhi* from faecal material, it nevertheless provided superior isolation rates to selenite and tetrathionate broths in the isolation of a wide variety of other Salmonellae. A report on the study is being prepared for publication.

Transport Medium : The question of transportation of specimens over long distances from tropical areas remains a pressing problem. There is no medium suitable for the transportation of all types of specimens, virological and bacteriological. Stuart's transport medium gives good results in the transporting of material for investigation of gonorrhoea but is not suitable for material requiring other types of investigation : tests are at present being conducted with methods of refrigeration during transport.

2.D : Mycobacteria

The work of this laboratory in 1965 is summarised in Table 2 (d) (Appendix). There was a drop in practically every type of routine work in 1965 as compared with 1964. This allowed more time being spent on development studies, leaving the total output of work practically the same in 1965 as in 1964. Of the 800 strains of *Myco. tuberculosis* isolated from human material during 1965 no primary resistant strain was found.

Sensitivity Testing : In conjunction with the staff of the Sir Charles Gairdner Hospital, trials of new anti-mycobacterial drugs B663 and Ethambutol were initiated. Suitable sensitivity testing methods were developed to cover these new drugs.

Table “C”
SALMONELLA SEROTYPES, 1965

Salmonella Serotype	Human Source		Other Sources				
	Cases	Faeces	Strains for Sero- typing	Sewage	Foodstuffs		Kangaroo Meat
					Egg	Cooked Pork	
Salmonella typhi ....	....	....	2	....	....	....	....
Salmonella paratyphi B	1	1	1	....	....	....	....
Salmonella typhimurium	30	50	28	1	1	....	....
Salmonella muenchen	19	26	4	....	....	....	5
Salmonella wandsbek	12	12	....	....	....	....	....
Salmonella hvittingfoss	9	9	....	....	....	....	....
Salmonella jangwani	5	7	....	....	....	....	....
Salmonella oranienburg	7	7	5	....	....	....	....
Salmonella litchfield	4	6	3	....	....	....	....
Salmonella san diego	4	5	2	....	....	....	....
Salmonella eastbourne....	5	5	2	....	....	....	....
Salmonella chester	4	4	3	....	....	....	....
Salmonella abony	3	3	1	....	....	....	....
Salmonella tennessee	3	3	....	....	....	....	....
Salmonella senftenberg	2	3	....	....	....	....	....
Salmonella adelaide	2	2	12	1	....	....	....
Salmonella derby	2	2	....	....	....	....	....
Salmonella ohlstedt	2	2	1	....	....	....	....
Salmonella give	2	2	1	....	....	....	....
Salmonella anatum	2	2	8	....	....	1	....
Salmonella alsterdorf	1	2	....	....	....	....	....
Salmonella enteritidis	2	2	7	....	....	....	2
Salmonella onderstepoort	1	2	1	....	....	....	....
Salmonella saint paul	1	1	1	....	....	....	....
Salmonella orion	1	1	2	....	....	....	5
Salmonella cholerae suis ....	....	....	8	....	....	....	....
Salmonella birkenhead ....	....	....	1	....	....	....	....
Salmonella new brunswick ....	....	....	1	....	....	....	....
Salmonella heidelberg ....	....	....	1	....	....	....	....
Salmonella newington ....	....	....	2	....	....	....	....
Salmonella poona ....	....	....	1	....	....	....	....
Salmonella bovis morbificans ....	....	....	5	1	....	....	....
Salmonella pullorum ....	....	....	13	....	4	....	....
Salmonella singapore ....	....	....	....	1	....	....	....
Salmonella orientalis ....	....	....	....	1	....	....	....
Salmonella species*	3	3	20	....	....	....	....
Totals	127	162	136	5	5	1	12

In addition one human case each was found with S. emmastad, urbana, california and bleadon.
* Serotyping in progress.

Table “D”
UNCLASSIFIED MYCOBACTERIA ISOLATED FROM 734 PERSONS
(Group III : 555 persons)

Specimen	1955-1956			1957-1958			1959-1960			1961-1962			
	Group			Group			Group			Group			
	II	III	IV	II	III	IV	II	III	IV	I	II	III	IV
Sputum	18	3	13	2	24	341	14	5	33	699	48
Bronchial Lavage	12	1	....	....	1	3
Laryngeal Swabs	2	....	....	....	....	....
Gastric Contents....	1	26	2	1	8	4	22	2	....	1	9	2
Pus	1	....	....	....	....	....	....	....	....
Urine	4	....	....	....	....	5	1	....	....	2	....
Resected Lung Tissue	3	....	....	....	3	....
Lung Tissue } Taken at P.M.	8	....	....	....	18	....
Lymph Node }	1	....
Bone Marrow }	1	....
Faeces	1	....	....	....	....	....
Pleural Fluid	1	....	....	....	....	....
Gland	3	....	....	2	3	....
Seminal Fluid
SO ₂ Aerosol
Total	1	48	5	15	10	28	398	18	5	36	737	53
Grand Total			49			30			444				831

Table "D" - continued

Specimen	1963				1964				1965				Total
	Group				Group				Group				
	I	II	III	IV	I	II	III	IV	I	II	III	IV	
Sputum	8	28	347	12	9	68	426	13	18	40	547	7	2,723
Bronchial Lavage	4	3	....	....	....	....	....	24
Laryngeal Swabs	2
Gastric Contents	2	1	....	2	2	....	....	1	9	....	95
Pus	3	....	....	....	....	....	4
Urine	2	....	....	5	2	....	....	....	....	21
Resected Lung Tissue	2	....	....	1	....	....	....	2	....	11
Lung Tissue	2	....	....	3	....	....	5	4	....	40
Lymph Node } Taken at P.M.	1
Bone Marrow }	1	....	....	....	....	....	....	....	....	2
Faeces	4	....	....	2	....	....	....	1	....	8
Pleural Fluid	1	....	2
Gland	3	....	....	2	....	....	....	1	....	14
Seminal Fluid
SO ₂ Aerosol	5	....	5
Total	8	28	349	27	9	74	447	15	18	46	570	7	2,952
Grand Total				412				545				641	2,952

Unclassified Mycobacteria : During the year a considerable amount of work was directed to standardising reference strains of unclassified mycobacteria for the Conference of International Union Against Tuberculosis held in October. An outcome of this work was the development of nitrate and nitrite reductase tests which have since been incorporated into the routine identification testing of strains isolated.

During the year, 641 unclassified mycobacteria strains were isolated from 734 patients. The distribution of the strains by Runyon's classification is shown in Table " D ". Of particular interest was the isolation of *M. kansasii* from a case in which the organism was cultured from 18 successive specimens. This is the first confirmed clinical case due to this organism in Western Australia.

Mycobacteria from Animals : The Northern Territory continued to yield positive animal material mainly from buffalo. Cattle from the North-West of Western Australia slaughtered at Robbs Jetty yielded a number of strains of *M. bovis*, all from cattle condemned by the meat inspectors. From a survey of glands taken from 26 pigs at Northam six were Battey strains and two Group II strains were isolated. *M. bovis* was not recovered from any of this stock.

Table "E"
MYCOBACTERIA ISOLATED FROM ANIMAL GLANDS (1965)

Source	Animal	Number of Glands	M. bovis	%	Group II	%	Group III	%
Northam	Pig	26	0	....	2	7	6	23
Northern Territory	Pig	1	0	....	1	100	....	....
	Buffalo	75	64	85	0	....	5	7
Robbs Jetty (North-West Cattle)	Cattle	11	9	82	0	....	0	....

World Health Organization : The Tuberculosis Reference Unit set up under the auspices of the World Health Organization received 238 strains of unclassified mycobacteria from other laboratories in Australia and abroad. Of these 55 were classified as *M. avium*. Strains and sputum were received from Taiwan, British Solomon Islands and New Zealand as well as from Australian laboratories.

2.E : Mycology

1965 work is summarised in Table 2 (e) (Appendix). There is little change in the amount of work done as compared with 1964.

Dermatophytoses continue to comprise the majority of fungal diseases occurring in Western Australia. As would be expected with our climate, the dermatophytes are prevalent for 12 months of the year. *Microsporum canis* appears to be fairly infectious in Western Australia and outbreaks in different suburbs of Perth are noted at various times—they are frequently associated with the arrival in the district of stray kittens.

Fortunately, Australia is reasonably free of many of the Systemic Mycoses, but we are constantly aware that they may appear. Because of this, small surveys of the likely habitats of some of these exotic fungi are carried out as the opportunities arise.

Four cases of Cryptococcosis were reported in these 12 months—three of the isolates were from C.S.F. and one from the lung. All isolates proved pathogenic to laboratory animals.

Aspergillus fumigatus was isolated from the sputum of five patients this year.

2.F : Parasitology

This is being reported for the first time as a separate item in the Annual Report. For comparison, Table 2 (f) (Appendix) shows the recoveries of parasites from 1960 onwards. The large increase in 1965 compared with previous years is due to increased awareness of the possibility of such infestations being present. Even with this much increased figure in 1965 we probably are detecting only a tiny fraction of the true numbers of individuals infected, especially in the North-West.

Table “ F ”, below, illustrates the obvious, namely that the majority of parasite infestations are to be found in the tropical sandy northern areas of Western Australia ; in addition, there are occasional outbreaks of parasite infestations in closed communities such as mental hospitals.

Table “F”
PARASITE DISTRIBUTION, 1964 AND 1965
IDENTIFIED BY CENTRAL PUBLIC HEALTH LABORATORIES

Parasite	Derby	Perth	Broome	Wyndham	Pt. Hedland	Geraldton	Carnarvon	Manjimup	Total
Ancylostoma duodenale	63	2	6	14	8	....	....	....	93
Ascaris lumbricoides ....	....	1	1	....	....	....	....	....	2
Echinococcus granulosus ....	....	1	....	....	....	....	....	....	1
Entamoeba histolytica ....	....	5	....	....	....	....	....	....	5
Enterobius vermicularis	2	1	2	1	....	....	1	1	8
Giardia lamblia ....	....	2	....	2	1	4	....	....	9
Hymenolepis nana....	19	1	17	5	....	2	....	....	44
Strongyloides stercoralis	1	1	....	....	3	....	....	....	5
Trichuris trichiura ....	....	35	....	....	....	....	....	....	35
Totals	85	49	26	22	12	6	1	1	202

2.G : Virology

The work increased by one-third over that of 1964. 1,686 specimens were received for virus culture and 740 for viral serology. 125 virus infections were proved by culture and a proportion of these were confirmed serologically. Table 2 (g) (Appendix) gives details of virus work done in 1965. The low figure of isolates is due in part to the fact that many specimens were examined from surveys, such as that in the local Children’s Hospital, and in part to the unsuitable nature of many of the specimens received for virus isolation.

For the medical practitioner responsible for the diagnosis and treatment of individual cases there is no doubt that virology is a disappointing section of the laboratory work. The techniques of recovery take so long that the information is only of interest in retrospect, with no advantage and sometimes some inconvenience to the patient : consequently, the findings in the Virology Section represent only a tiny fraction of the total amount of sickness occurring due to virus agents, and may give a false picture of the relative frequency of some infections. This is to be regretted as certain viral infections may do much harm to the patient if the proper diagnosis is not established, e.g. myocarditis of Coxsackie infection, Rubella infections in pregnant women, cot deaths in infants, etc.

Convalescent Sera : One of the factors militating against satisfactory viral identifications is the necessity for a specimen of serum from the convalescent patient to establish whether or not there has been a significant rise in titre. The clinician feels he cannot disturb his patient to obtain a specimen after the patient has recovered, but the necessity for such investigations is well known and is illustrated by one patient from whom we grew Polio I virus during an influenza epidemic, but this virus presumably was only a lodger as the acute and convalescent sera showed no indication of polio antibody.

Influenza B : During the year following upon the outbreak of Influenza B in the Eastern States a similar, very small epidemic appeared in Western Australia beginning in a group of Naval recruits transferred from the Eastern States.

Cell Lines : The biggest single problem still remains that of obtaining and maintaining satisfactory cell lines for the cultivation of viruses. This problem is world-wide.

3. Biochemistry

The work of the Biochemistry Department for the year 1965 is summarised in Table 3 (Appendix) : the routine work shows an increase in 1965 of 19% compared with 1964, but when the developmental work is added, which has not previously been done, the work shows a seeming increase of 48% over 1964, with the actual increase only about 19% as stated. Lack of space and to a lesser extent lack of staff have prevented testing as yet of certain potentially useful methods, e.g. the enzymes in coronary heart disease. Lack of space has also prevented a fuller use of automation. A measure of the lag in work in Western Australia is that one Scottish hospital reports 90,000 chemical tests per annum from a hospital with 250 beds compared with the 28,000 tests carried out in this Department in 1965 for a considerable portion of the State.

Errors in Clinical Biochemistry

As stated before, to the clinician the Biochemistry Department is the one laboratory section in which results are highly accurate and highly reproducible. This is quite incorrect : to quote a recent survey from the University of Liverpool " the existence of errors (in biochemistry estimations) which are significant for clinical practice is a universal problem and no country maintains an adequate standard of laboratory precision ". In Australia the College of Pathologists issues unknown sera at intervals of time and interested laboratories submit their findings of the contents of the sera. By this and other control measures attempts are being made to improve standards of routine investigation. The same standards of control and supervision are used in the Branch Laboratories.

Development

The development work represented 18% of the total work done in the Biochemistry Department during 1965. This developmental work established among other things that the polarograph use would be limited to estimations of a few of the heavy metals in the body fluids ; that the chromatograph might prove of value in fields other than steroid estimations, especially by the use of thin-layer chromatography ; and that a reliable technique for butanol-extractable iodine could offer an acceptable alternative to the protein-bound iodine estimation.

4. Haematology

Table 4 (Appendix) summarises the work of the Haematology Department for the year 1965. The work showed an increase of 18% in tests and 27% in unit values over the figures for 1964. The discrepancy in the increase of tests compared with the increase in unit values is due to the fact that the increased tests were mainly of the more complex type with high unit values.

The staff situation has improved with the employment of two additional trained technologists. Space is now the major problem, with a little help being given by the Director giving up his office in favour of the Blood Bank.

Malaria

Two cases were identified during the year. It is anticipated that this figure will increase with the increase in overseas travel, e.g. in 1963 17 soldiers returning from New Guinea were found to have malaria.

Equipment

The additional space made available during the year permitted the buying by the hospital of a refrigerated centrifuge for the packing of red cells when such preparations are required for transfusion. An additional Blood Bank refrigerator has also been ordered by the Gairdner Hospital to cope with the increased demand for blood due to the change in the function of the hospital from chest patients to general patients.

Cross-matching for Blood Transfusion

A full compatibility check of blood for transfusion to any particular patient takes 2½ hours, largely due to the necessity to carry out a full Coombs test. This is a constant irritation to many clinicians, who seemingly are unaware that two other methods of obtaining blood for transfusion are always available, namely :

1. " Immediate " : In dire emergencies Group O Rh -ve blood will be issued without any compatibility testing whatever where the need is such that it over-rides normal safety considerations. This will occur only about once yearly.
2. " Emergency " : Here the checking of blood takes 30 minutes as compared with 2½ hours of the full compatibility testing. The difference in time lies largely in the time necessary for a full Coombs check. Many clinicians and others are of the opinion that this emergency method is all that is necessary and that the " full " test is a waste of time. Where the clinician feels that he cannot wait 2½ hours we will always carry out an emergency test provided all concerned realise that in about 1% of all transfusions the long method will detect incompatibilities which would be missed by the emergency method, and we know of cases where the use of the emergency method alone would have placed the patient's life in jeopardy.

Vitamin Estimations

Hitherto, estimation of vitamins in blood disorders was limited to B₁₂ levels but arrangements have now been made for the estimation of folic acid levels when required.

5. Serology

The 1965 work of the Serology Laboratory is set out in Table 5 (Appendix).

The pattern in the Serology Laboratory was not unlike that of preceding years. Tests increased by 2% over 1964 figures, and units increased by 3.9%. We are now very conscious of the need for more working space. It is no longer comfortable to collect material from patients, interview police officers, and discuss staff matters because of sheer pressure of people and equipment.

Venereal Diseases

After running comparative tests, we began to use C.S.L. antigen for our V.D.R.L. flocculation tests. In our hands, it is slightly more sensitive than the English antigen we had previously used for some years. It was evaluated in routine use and against a commercial standard treponemal serum.

Toxoplasmosis

The Haemagglutination Test and the Complement Fixation Test continue to serve as our routine tools.

Pregnancy Tests

As in 1964, we found the U.C.G. Test to be more generally satisfactory than the other commercially available pregnancy tests tried. It proved to be sensitive and reliable. Like laboratory results generally, findings have to be interpreted in the light of the clinical condition. Two criticisms were directed at us in regard to U.C.G. Tests—one when the medical officer considered the test to be too sensitive, and the other when it was considered that we issued a “false negative”. The former was at variance with the Toad Test, the latter in accord with it. We did not hear the outcome of either. Toad Tests are still done in parallel with the U.C.G. Tests.

Quantitative tests are now done by a tube method in cases of suspected chorioepithelioma and hydatidiform mole ; we run Toad Tests in dilution on these also.

Brucellosis

A case of brucellosis in a nine-year-old boy at Geraldton directed a good deal of attention to the milk supply in that district. We carried out Ring Tests on 204 samples of milk from Geraldton, of which 57 were “positive”. This work was done in conjunction with the staff of the Geraldton Branch and, later, the laboratories of the Department of Agriculture.

Leptospirosis

16 clear cases of this disease and 3 further probable cases were demonstrated during 1965.

An interesting point was noted when the serum from one case, a man from Bunbury, showed a non-specific rise in *S. typhi* “H” agglutinin, in association with *Leptospire* agglutinins. The man had previously had T.A.B. inoculation.

Virus Diseases

Diagnoses were made serologically on the following :—

- 15 cases of *M. influenzae* B infection ;
- 2 cases of *M. parainfluenzae* 3 infection ;
- 5 cases of Respiratory Syncytial Virus infection ;
- 3 cases of *Coxiella burnetii* infection ;
- 3 cases of primary atypical pneumonia (demonstrated by the Cold Agglutinins Test) ; and
- 13 adenovirus antigens submitted by the Virus Laboratory were confirmed serologically by C.F. Tests.

Aspergillosis

The return to Sir Charles Gairdner Hospital of Dr. J. Smyth and a visit in December by Dr. Joan Longbottom of London resulted in the awakening of an interest here in the serology of this disease. With some *Aspergillosis fumigatus* antigen kindly supplied by Dr. Longbottom and a technique suggested by her, we were able to start doing Agar Gel diffusion tests designed to detect *Aspergillosis* antibodies.

Forensic Serology

1965 was busy but not especially noteworthy in this connection. Kangaroo protein in smallgoods, demonstrated here, resulted in two convictions in a Perth court ; considerable public interest was aroused.

Staff

Miss Jenkyn, Senior Technologist, made an unofficial visit to the Eastern States and visited Dr. M. F. Garner at the V.D. Reference Laboratory at Lidcombe, N.S.W., and Dr. F. Jennis at his laboratory at the Sydney Hospital, Sydney, N.S.W.

Mr. A. F. Drummond, Principal Technologist, made two unofficial visits to Melbourne, mainly to discuss training of medical laboratory technologists.

Prospects

1. C.F. Tests for *Mycoplasma pneumoniae* infections.
2. Development of Agar Gel Diffusion work.
3. Indirect Fluorescent Antibody Technique for Toxoplasmosis.
4. Chromosome studies.

6. Departments of Morbid Anatomy and Exfoliative Cytology

Tables 6 (a) and 6 (b) (Appendix) give details of the work done in 1965 in the above Departments. The work of the Morbid Anatomy Department increased by 11%, with the Cytology Department showing an increase of 33%.

Morbid Anatomy

Staff : The loss by resignation of the Head of the Histopathology Division, Dr. B. G. T. Elmes, in December, 1965, further aggravated the shortage created by the resignation of Dr. C. M. Bevan in August, 1965. It has been necessary to transfer younger pathologists from other sections of the laboratories, thus interfering with their training.

There is also a serious chronic shortage of technologists of all grades with undue reliance being placed on untrained attendants.

Working Space : Shortage of working space is almost as serious as shortage of staff. Much of the work is done in temporary huts which are hot and which vibrate with air-conditioning when switched on, preventing the use of microscopes in the huts. Working space is especially desirable to permit the establishing of a museum.

Equipment : The purchase of a cryostat in April, 1965, has much quickened and improved the examination of urgent specimens of tissues as from operating theatres, and the air-conditioning of the necropsy rooms has much improved conditions.

A portable set of necropsy instruments and equipment has been placed available for the carrying out of country post-mortem examinations when it is considered that these should be done by the Central Laboratory staff.

Type of work : Although the figures for sections cut and stained show only an 11% increase in 1965 over the 1964 figures, actually the work increase was much more as special stains are being increasingly required for special investigations.

The predominant material in the Histopathology Department continues to be gynaecologic and dermatologic biopsies with an increasing amount of general material from the hospital itself.

Cases of Interest : The interesting cases include :

- (a) One of toruloma of the lung in a young white adult male formerly of New South Wales.
 - (b) Two cases of mucocoele of the appendix.
 - (c) A benign thymoma in a middle-aged woman.
 - (d) A further case of cat-scratch disease in a young boy.
 - (e) A case of multiple primary bronchial carcinoma.
 - (f) Two cases of orf, both from country people who had been in contact with sheep.
 - (g) A case of mixed salivary gland tumour of the skin which had been resected and had recurred.
 - (h) A case of malignant carcinoid syndrome.
 - (i) A foreign body removed from the abdomen of a native after perforating the small intestine.
- This foreign body was subsequently identified by the West Australian Museum as a tail vertebra from a kangaroo.

Cytology

Staff : The problems in the Department of Morbid Anatomy are echoed in the Cytology Department. There has been an increase of 33% in the work in 1965 compared with that in 1964 but there has been no real increase in the staff or the laboratory space. In addition to the large numbers of sputum tests for cancer which have always been a feature of the Gairdner Hospital (originally a chest hospital), the Public Health Laboratories necessarily handle considerable numbers of cervical cytology specimens from the country. It is a good rule that where patients have symptoms the cytology specimens must be examined by a pathologist and, since all sputum specimens come from patients with symptoms, we have been slow to train screeners. As a result a great part of the routine cervical cytology examinations are done by the medical staff. Training courses in cytology were given but only with a limited amount of gain because of the continued wastage of young female personnel by resignation. It may be necessary to limit cytology training to older, more mature workers.

Cervical Cytology : Although it represents increased work for the clinician and more work for the pathologist, we are firmly of the opinion that the three-slide system of examination is highly preferable to the single-slide system, and we are of the same opinion as is held in the United States, namely that cervical cytology examinations should begin with the twenty-year-old individuals, *NOT* with the thirty-year-old patients. In the last year three of our carcinoma patients have been under the age of thirty years.

Sputum Cytology : This is the easiest and earliest method of diagnosing cancer of the lung but it is still not used sufficiently especially in country patients. Where this system of investigation has been used by country clinicians we have on several occasions identified cancer cells in the sputum specimens. It is not sufficiently realised that lung cancer is numerically a much more serious problem than is cervical cancer. In the last seven years we have recorded over 600 cases of lung cancer in this hospital.

IV. BRANCH LABORATORIES

The work of the Branch Laboratories for 1965 is shown in Table 1 (c) of the Appendix. Compared with 1964, the work done in 1965 shows a 48% increase in tests and a 23% increase in unit values, i.e. the increase in tests has mainly been in the simpler investigations with lower unit values.

With the opening of a new laboratory at Wyndham and the planning of a new laboratory for Merredin the empty spaces on the map are slowly being filled in. There are now eleven major branch laboratories and four minor branch laboratories functioning over an area as big as Western Europe, stretching from Wyndham to Albany.

The work done in the Branch Laboratories includes all types of laboratory work requiring an immediate answer to be of any value, i.e. haematology with blood transfusion, biochemistry and bacteriology. This means that the trained staff must be experienced and proficient in a wide field of laboratory work and it says much for their efficiency that in the years of functioning of the country laboratories we do not know of any significant mistake in work. Although certain of the country laboratories are authorised more than one technologist, hitherto it has not been possible to recruit the technologist grade to go to the country where there is little to attract them financially or otherwise. As a result, the senior staff are on call for emergencies every day all day, including weekends and holidays, and where there are 2-3 doctors in the area this represents much overtime. Again, it is greatly to the credit of the technologists in these country posts that in spite of the long hours worked and the heavy demands on their off-duty time they continue to give a high level of service and obviously continue to enjoy the confidence and respect of the local medical practitioners. It would be difficult to overestimate the service these men render to the medical profession in Western Australia.

V. RESEARCH

Although developmental work has only specifically been recorded and evaluated for the Departments of Biochemistry and Mycobacteria investigation, in point of fact developmental work of substantial amount is being carried out in all laboratory divisions. This is most essential, as the research techniques of today so often become the routine methods of tomorrow. Examples of this are :

In serology the investigation of patients for toxoplasmosis is now routine.

In Mycobacteria work the developmental investigations of Dr. Kovacs were responsible for the detection of the large amount of Battey infection in Western Australia and bovine tuberculosis in the Northern Territory.

In histopathology the meticulous research methods used by Dr. Laurie in heart examinations have now become recognised as necessary for the satisfactory investigation of sudden deaths, with the result that heart specimens are being submitted for histopathological examination with much greater frequency.

In haematology the study of chromosomes is rapidly becoming an important method of investigation.

In the Enteric Diseases laboratory large-scale investigations continue into the value of new media.

Unfortunately, shortages of time, of space, and of staff have allowed only a few major research investigations, e.g. the large-scale investigation of the effect of diet on pigs and the large-scale investigations into the effects of sub-clover ; both of these major projects were carried out in combination with the Animal Health Laboratories, Department of Agriculture.

VI. PUBLICATIONS

During the Second Annual Medical Congress held in Perth in 1965, Dr. Laurie gave one paper on the use of sputum cytology in detecting lung cancer, and gave another paper on the effect of chronic diseases in coronary atherosclerosis. Both of these papers will duly appear in print.

Just prior to his death, Dr. Kovacs drew up an important summary of his work on the Mycobacteria : this paper was later read by Dr. Ernest H. Runyon at the XVIIIth International Tuberculosis Conference in Munich in October, 1965.

Mr. M. Elliott of these Laboratories collaborated with Mr. J. G. Brockis of the Department of Surgery, University of Western Australia, and Mr. M. Lissiman in the article, " The Rate of Healing of Wounds treated with Ultra-Violet Light," which was published in the *Australian and New Zealand Journal of Surgery*, November, 1965, Vol. 35, No. 2. Mr. Elliott did the laboratory work.

VII. TEACHING

Teaching is becoming an increasingly bigger demand and now includes organised lectures and demonstrations not only to nursing and laboratory staff but also to outside departments such as the Police.

VIII. ACKNOWLEDGMENTS

Again we are indebted to workers here and abroad for help in difficult cases. It is not possible adequately to list the many people who help us but we are especially in debt to the staff of the Sloan-Kettering Institute, New York, to the V.D. Reference Laboratory in Whitechapel, London, to Dr. J. Holme of Fremantle, Western Australia, and to the Red Cross for help in maintaining country blood banks.

Finally, I would like to record my appreciation of the support given me by all members of the Laboratories staff during the year.

Wm. LAURIE, D.S.O., M.D., T.D.D., M.C.P.A.
Director, Public Health Laboratory Services.

Table 1(a)
PUBLIC HEALTH CENTRAL LABORATORIES—SUMMARY OF WORK DONE, 1965

	Source										Total 1964		1965 Increase Tests Units			
	State				C'wealth		S.C.G.H.		Others		Total 1965					
	Tests		Unit Values		Tests		Unit Values		Tests		Unit Values			Tests	Unit Values	
Microbiology	10,847	95,802	3,603	22,343	12,237	69,674	2,147	13,731	28,834	201,550	25,506	183,594	13.0	9.8
	9,752	97,520	...	...	...	...	...	...	9,752	97,520	7,855	78,550	24.2	24.2
	3,786	51,835	187	1,789	266	2,543	...	...	4,239	56,167	3,360	48,118	26.2	16.7
	11,022	86,618	33,593	197,387	...	...	...	...	44,615	284,005	45,393	295,082	...	...
	6,650	44,360	...	...	...	...	...	...	6,650	44,360	6,864	43,550	...	1.9
	24,777	157,722	...	...	...	...	...	...	24,777	157,722	19,382	128,558	27.8	22.7
Biochemistry	8,376	119,327	3,920	43,524	14,425	121,090	1,344	12,203	28,065	296,144	22,752	199,219	23.4	48.7
	14,514	71,140	10,220	40,335	41,048	160,146	5,320	23,377	71,102	294,998	60,004	232,165	18.5	27.1
Haematology
	42,503	277,905	3,752	25,186	1,310	9,575	1,887	20,785	49,452	333,451	48,460	320,949	2.0	3.9
Serology

Histopathology	7,351	124,510	1,418	21,455	4,352	97,470	2,877	43,155	15,998	286,590	14,455	257,710	10.7	11.2
	5,693	85,395	1,563	23,445	2,317	34,755	4,138	62,070	13,711	205,665	10,343	155,145	32.6	32.6
A. Histopathology and Morbid Anatomy
B. Cytology
Total	145,271	1,212,134	58,256	375,464	75,955	495,253	17,713	175,321	297,195	2,258,172	264,374	1,942,640	12.4	16.2

Table 1(b)

DISTRIBUTION OF WORK DONE ON SPECIMENS RECEIVED FROM COMMONWEALTH SOURCES DURING THE YEAR 1965

	S.C.G.H. (T.B. patients)		Repatriation O.P.C., General Hospital and Defence		Kalgoorlie		Perth and Fremantle Chest Clinic		Commonwealth Scientific and Industrial Research Organisation		Others		Total	
	Tests	Units	Tests	Units	Tests	Units	Tests	Units	Tests	Units	Tests	Units	Tests	Units
General Bact- teriology	1,555	8,481	781	4,456	1,193	9,015	74	391	....	....	....	....	3,603	22,342
Biochemistry....	1,828	23,093	864	6,218	1,020	9,191	208	5,022	....	....	....	....	3,920	43,524
Haematology....	4,698	19,835	5,188	19,242	15	160	295	1,009	24	89	....	....	10,220	40,335
Histopathology	124	1,860	98	1,655	1,193	17,895	3	45	....	....	....	....	1,418	21,455
Cytology	529	7,935	125	1,875	543	8,145	366	5,490	..	....	....	....	1,563	23,445
Salmonella	52	452	112	1,089	23	248	....	....	....	....	....	....	187	1,789
Serology	71	843	1,278	7,870	2,403	16,473	....	....	....	....	....	....	3,752	25,186
Tuberculosis	12,514	76,651	9,019	52,038	493	2,651	6,202	32,278	....	....	5,365	33,769	33,593	197,387
Total	21,371	139,150	17,465	94,443	6,883	63,778	7,148	44,235	24	89	5,365	33,769	58,256	375,464

Table 1(c)

PUBLIC HEALTH BRANCH LABORATORIES—SUMMARY OF WORK DONE, 1965

	Total—1965		Total—1964		Increase—1965	
	Tests	Unit values	Tests	Unit values	Tests	Unit values
Albany	31,991	101,978	23,244	88,878	% 37.6	% 14.7
Bunbury	32,446	208,428	22,076	203,175	47.0	2.6
Busselton	7,719	35,066	....	....	No figures before 1965	
Carnarvon	2,258	32,986	693	9,826	Opened August, 1964	
Claremont	13,257	59,670	8,478	39,244	56.4	52.0
Derby	10,893	60,231	7,087	76,208	53.7	....
Geraldton	13,250	84,337	7,159	51,108	85.1	65.0
Manjimup	7,359	34,544	7,199	39,865	2.2	....
Narrogin	10,848	57,150	10,846	53,654	0.0	6.5
Northam	15,099	52,388	7,676	39,972	96.7	31.1
Port Hedland	4,311	25,689	1,344	8,180	Opened April, 1964	
Wooroloo	9,271	53,883	13,259	65,719	....	....
Wyndham	2,602	26,856	....	....	Opened January, 1965	
	161,304	833,206	109,061	675,829	47.9	23.3

Table 2(a)

CLINICAL BACTERIOLOGY—WORK DONE 1965

	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Hospital	Others			
Animal Inoculations	92	1	1	....	94	45	% 108.9
Blood Specimens	32	74	76	11	193	548	....
C.S.F. Specimens	49	4	48	34	135	130	3.8
Faeces Specimens	1,034	14	25	....	1,073	97	11 times more
Foodstuffs: Fresh	471	2	....	....	473	290	63.1
Tinned or Frozen	163	....	....	....	163	17	9½ times more
Sensitivity Tests	3,709	672	2,280	575	7,236	7,227	0.1
Serous Effusions	24	56	222	20	322	456	....
Sputum	184	644	3,640	192	4,660	4,878	....
Swabs all Sources	935	246	918	265	2,364	2,656	....
Urine Examinations	475	843	4,543	870	6,731	5,789	16.3
Vaginal Specimens	978	56	135	145	1,314	729	80.2
Venereal Diseases	2,518	958	17	9	3,502	2,217	58.0
Water	67	....	2	....	69	52	32.7
Others	116	33	330	26	505	375	34.7
Totals—							
Tests	10,847	3,603	12,237	2,147	28,834	25,506	13.0
Unit Values	95,802	22,343	69,674	13,731	201,550	183,594	9.8

Table 2(b)
WATER AND SEWERAGE SURVEYS—WORK DONE 1965

	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Hospital	Others			
Water: A. Drinking	5,745	....	....	....	5,745	5,321	% 8.0
B. River, Ocean	2,043	....	....	....	243	1,867	9.4
C. Sewerage	425	....	....	....	425	374	13.6
D. Membrane Filters	1,504	....	....	....	1,504	267	4½ Times
Cool Drinks	35	....	....	....	35	26	34.6
Total:							
Tests	9,752	....	....	....	9,752	7,855	24.2
Unit Values	97,520	....	....	....	97,520	78,550	24.2

Table 2(c)
ENTERIC DISEASES LABORATORY—WORK DONE 1965

	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Hospital	Others			
Animal Inoculation	1	....	....	....	1	45	%
Blood Specimens ....	....	....	....	....	....	5	....
Faeces specimens	2,884	171	264	....	3,319	2,503	32.6
Foodstuffs: Fresh	160	....	....	....	160	203	....
Frozen/Tinned	268	....	....	....	268	218	22.9
Fertilisers ....	....	....	....	....	....	....	....
Sensitivities	17	....	....	....	17	....	....
Sputum ....	....	....	2	....	2	....	....
*Others	456	16	....	....	472	386	22.3
Total:							
Tests	3,786	187	266	....	4,239	3,360	26.2
Unit Values	51,835	1,789	2,543	....	56,167	48,118	16.7

* Others—(includes 343 strains for identification) and 66 Moore Swabs.

Table 2(d)
MYCOBACTERIA—EXAMINATIONS IN 1965

Type of Examinations								1965 Total	1964 Total	1965 Increase
<i>Sputum :</i>										%
Direct Smears	....	....	....	....	....	....	63	25,439	26,053	....
Centrifuged Deposits	....	....	....	....	....	....	12,593			
Cultures	....	....	....	....	....	....	12,590			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	193			
<i>Gastric Contents :</i>								745	933	....
Centrifuged Deposits	....	....	....	....	....	....	370			
Cultures	....	....	....	....	....	....	370			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	5			
<i>Laryngeal Swabs :</i>								20	23	....
Centrifuged Deposits	....	....	....	....	....	....	7			
Cultures	....	....	....	....	....	....	7			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	6			
<i>Pleural Fluids :</i>								423	434	....
Sulas D.S.	....	....	....	....	....	....	2			
Centrifuged Deposits	....	....	....	....	....	....	141			
Cultures	....	....	....	....	....	....	140			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	140			
<i>Bronchial Lavage :</i>								12	250	....
Centrifuged Deposits	....	....	....	....	....	....	4			
Cultures	....	....	....	....	....	....	4			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	4			
<i>Cerebral Spinal Fluid :</i>								30	29	....
Direct Smears	....	....	....	....	....	....	1			
Centrifuged Deposits	....	....	....	....	....	....	10			
Cultures	....	....	....	....	....	....	9			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	10			
<i>Urine :</i>								2,151	2,083	3.3
Direct Smears	....	....	....	....	....	....
Centrifuged Deposits	....	....	....	....	....	....	717			
Cultures	....	....	....	....	....	....	717			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	717			
<i>Miscellaneous :</i>								1,806	3,900	....
Direct Smears	....	....	....	....	....	....
Centrifuged Deposits	....	....	....	....	....	....	715			
Cultures	....	....	....	....	....	....	717			
Direct Guinea Pig Inoculations	....	....	....	....	....	....	374			
Smears for M. Leprae	....	....	....	....	....	....	....	52	7	7½ times
Virulence Tests	....	....	....	....	....	....	....	96	96	....
Sensitivity Tests	....	....	....	....	....	....	....	1,421	2,805	....
Confirmation Tests	....	....	....	....	....	....	....	1,398	1,345	3.9
Total Examinations :								33,593	37,958	....
Routine Work :								197,387	232,190	....
Improvement work carried out during the year 1965 : Tests								11,022	7,435	48.2
Unit Values								86,618	62,892	37.7
Total								44,615	45,393	....
Unit Values								284,005	295,082	....

Table 2(e)
MYCOLOGY—WORK DONE 1965

								Source				1965 Total	1964 Total	1965 Increase
								State	Common- wealth	Hospital	Others			
Collection of Specimens								564	....	....	....	564	587	%
Sputum								52	....	....	....	52	....	....
Swabs								2,646	....	....	....	2,646	2,940	....
C.S.F. and Other Fluids								....	....	....	....	....	54	....
Skin, Hair, etc.								1,802	....	....	....	1,802	1,610	11.9
Special Examinations								878	....	....	....	878	929	....
Cervical and Other Smears								....	....	....	....	....	14	....
Animal Inoculations								8	....	....	....	8	2	4 times
Mycological Smears								6	....	....	....	6	1	6 times
Sensitivities								694	....	....	....	694	727	....
Total:														%
Tests								6,650	....	....	....	6,650	6,864	....
Unit Values								44,360	....	....	....	44,360	43,550	1.9

Table 2 (f)
PARASITE IDENTIFICATIONS, 1960-1965,
CENTRAL PUBLIC HEALTH LABORATORIES

Parasite	Year						Total
	1960	1961	1962	1963	1964	1965	
Ancylostoma duodenale	16	4	31	3	75	18	147
Ascaris lumbricoides	1	3	11	0	2	0	17
Diphyllobothrium latum	0	0	1	0	0	0	1
(Finnish Migrant)							
Echinococcus granulosus	0	0	0	0	0	1	1
Entamoeba histolytica	0	0	2	0	2	3	7
Enterobius vermicularis	1	0	3	2	6	2	14
Giardia lamblia	0	2	3	1	2	7	15
Hymenolepis nana	0	6	23	7	25	19	80
Malaria* ....	....	2	1	19	2	2	26
Strongyloides stercoralis	0	0	5	0	0	5	10
Taenia saginata	1	0	0	0	0	0	1
Trichuris trichiura	0	33	45	28	3	31	140
Annual Total	19	50	125	60	117	88	459

* All malaria cases had resided in malarious areas overseas.

Table 2(g)
VIROLOGY SECTION—WORK DONE 1965

								1965 Total	1964 Total	1965 Increase
										%
Preparation of Inocula ....	....	....	....	....	....	....	....	1,365	779	75.2
Tissue Culture ....	....	....	....	....	....	....	....	4,841	4,320	12.1
Egg Inoculation ....	....	....	....	....	....	....	....	1,029	1,792	....
Animal Inoculation ....	....	....	....	....	....	....	....	5,635	3,941	43.0
Neutralisation ....	....	....	....	....	....	....	....	7,792	5,311	46.7
Haemadsorption ....	....	....	....	....	....	....	....	590	281	110.0
Haemagglutination and Inhibition ....	....	....	....	....	....	....	....	1,927	2,162	....
Sterility Tests ....	....	....	....	....	....	....	....	1,124	571	96.8
Others ....	....	....	....	....	....	....	....	474	225	110.7
Total:										
Tests ....	....	....	....	....	....	....	....	24,777	19,382	27.8
Unit Values ....	....	....	....	....	....	....	....	157,722	128,558	22.7

Table 3
BIOCHEMISTRY DEPARTMENT—WORK DONE, 1965

Work Done	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Gairdner Hospital	Others			
							%
Serum/Plasma Tests	3,360	3,772	13,968	1,154	22,254	17,504	27.1
C.S.F. Tests	99	7	98	61	265	258	2.7
Gastric Contents ....	....	....	4	....	4	6	....
Effusions ....	....	17	35	4	56	127	....
Urine Examinations	69	58	190	68	385	400	....
Metabolic Tests	10	9	58	8	85	62	37.1
Others (including blood collection)	4,838	57	72	49	5,016	4,395	14.1
Total—							
Tests	8,376	3,920	14,425	1,344	28,065	22,752	23.4
Unit Values	119,327	43,524	121,090	12,203	296,144	199,219	48.7

Unit Values for routine work, including collection 237,644—increase 19.3%.
" " " work in Development Laboratory 51,960
" " " Preparation of Reagents 6,540

Total 296,144 units—increase 48.7%.

Table 4
HAEMATOLOGY DEPARTMENT—WORK DONE, 1965

Tests Done	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Gairdner Hospital	Others			
<i>Red Cells—</i>							%
Total levels	123	206	526	155	1,010	1,407	....
Haematocrit	467	1,144	4,699	499	6,809	5,967	14.1
Absolute Values	701	1,544	5,746	782	8,773	8,714	0.7
Sedimentation	352	1,011	3,700	361	5,424	4,513	20.2
Film Examination	460	1,150	4,750	370	6,730	5,882	14.4
Fragility Tests ....	....	1	3	....	4	2	100.0
Reticulocytes	7	193	277	....	477	224	113.0
Stipple Cells ....	....	....	....	....	....	....	....
Hb. Levels	482	1,147	4,721	495	6,845	5,977	14.5
Platelets	306	606	2,018	318	3,248	*1,655	96.3
<i>White Cells—</i>							
Total	403	946	4,140	395	5,884	5,100	15.4
Differential	392	938	4,123	312	5,765	5,060	13.9
L.E. Cells	18	11	35	21	85	135	....
<i>Blood Grouping—</i>							
Major	330	58	795	541	1,724	1,286	34.1
Minor	325	58	795	535	1,713	1,278	34.4
Compatibility	7	148	2,505	....	2,660	2,139	24.4
Rh Antibodies	77	2	....	423	502	504	....
Genotyping	1,221	7	2	41	1,271	....	....
<i>Bone Marrow Examination—</i>	22	3	41	6	72	23	213.0
<i>Coagulation Tests—</i>							
Prothrombin Time	75	842	1,774	7	2,698	2,406	12.1
Bleeding Time	5	20	58	....	83	66	25.8
Clotting Time	7	16	71	....	94	72	30.6
Clot Retraction	3	5	23	....	31	34	....
<i>Others (including Blood Collection)....</i>	8,731	164	246	59	9,200	*7,560	21.7
<i>Totals—</i>							
Tests	14,514	10,220	41,048	5,320	71,102	60,004	18.5
Unit Values	71,140	40,335	160,146	23,377	294,998	232,165	27.1

* In 1964, platelets included in others (9,215—1,655=7,560).

Table 5
SEROLOGY DEPARTMENT—WORK DONE, 1965

Work Done	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Gairdner Hospital	Others			
<i>Treponemal Tests</i>	21,930	1,745	415	....	24,090	23,040	% 4.6
<i>Gonococcal Tests</i>	1,771	303	23	....	2,097	2,455	....
<i>Hydatid Tests</i>	146	8	18	....	172	259	....
<i>Bacterial Agglutinations</i>	5,302	505	296	....	6,103	6,894	....
<i>Rheumatic Tests</i>	2,446	875	173	321	3,815	3,073	24.1
<i>Leptospiral Tests</i>	1,131	7	16	....	1,154	1,393	....
<i>Viral, Rickettsial and Protozoal Tests</i>	6,735	308	335	....	7,378	7,551	....
<i>Hormone Tests</i>	553	....	26	1,566	2,145	2,059	4.2
<i>Medico-Legal Tests</i>	2,142	....	....	....	2,142	1,467	46.0
<i>Others</i>	347	1	8	....	356	269	32.3
<i>Totals—</i>							
Tests	42,503	3,752	1,310	1,887	49,452	48,460	2.0
Unit Values	277,905	25,186	9,575	20,785	333,451	320,949	3.9

Table 6 (a)
HISTOPATHOLOGY AND MORBID ANATOMY—WORK DONE, 1965

Work Done	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Gairdner Hospital	Others			
Autopsies	7	1	174	....	182	156	% 16.7
Autopsies (Police)	70	....	....	....	70	65	7.7
Sections of Biopsies	1,466	1,407	1,768	2,877	7,518	13,177	2.8
Sections of Autopsies....	3,572	10	2,387	....	5,969		
Sections of Animals	61	....	....	....	61		
Others	2,175	....	23	....	2,198	1,057	108.0
Total Examinations	7,351	1,418	4,352	2,877	15,998	14,455	10.7
Units	124,510	21,455	97,470	43,155	286,590	257,710	11.2

Table 6 (b)
CYTOLOGY—WORK DONE, 1965

Work Done	Source				1965 Total	1964 Total	1965 Increase
	State	Common- wealth	Gairdner Hospital	Others			
Exfoliative cytology	5,693	1,563	2,317	4,138	13,711	10,343	% 32.6
Total :							
Examinations	5,693	1,563	2,317	4,138	13,711	10,343	32.6
Units	85,395	23,445	34,755	62,070	205,665	155,145	32.6

Appendix III

TUBERCULOSIS CONTROL BRANCH

ANNUAL REPORT FOR THE YEAR ENDED 31st DECEMBER, 1965

The incidence of active pulmonary disease (including reactivations) has declined to 19 per 100,000 of population. New cases are at a level of 16 per 100,000. These figures are further reduced by elimination of patients with proven disease due to atypical mycobacteria. Excluding the latter, the new active case rate of pulmonary infection due to M. tuberculosis is 14.7.

Since the anti-tuberculosis campaign got under way in the early 1950's the overall notification rate has been reduced by approximately two-thirds, allowing for a tendency to over-notification in the early years.

NOTIFICATIONS TO THE TUBERCULOSIS REGISTER

Persons with disease due to atypical mycobacteria are entered on the Tuberculosis Register for statistical and other reasons mainly associated with problems of diagnosis.

Notifications received during the year have been classified according to the organism producing disease and form of disease as follows :

Form	M.T.B. (human type)	Proven Atypical Mycobacteria			Probably Atypical
		Runyon Group			
		I	II	III	
Pulmonary (adult type)	135	2	2	13	....
Pleurisy with effusion	1	....	....	....	....
Non-Pulmonary :					
Glands	6 (includ- ing one doubtful)	....	....	1	3
Genitourinary	9	....	....	....	....
Bone and Joint	4	....	....	....	....
Abdominal	2	....	....	....	....

There were no cases of proven tuberculosis.

Six of the above patients were transferred in from other States. Included are 25 re-notifications (two in the atypical group).

SOURCE OF NOTIFICATIONS

One-third of patients were diagnosed through the activities of Chest Clinics. Private practitioners and mass compulsory surveys together accounted for another one-third—a relative falling off by comparison with previous years.

Chest Clinics are becoming more important in the diagnosis of new cases—inevitably so, since attention in the future will be concentrated on special groups at risk as the tuberculosis incidence falls.

In spite of the fewer cases discovered by private medical practitioners, a good liaison with them has been maintained. Activities of country practitioners are an important factor in a state with a small population scattered over a large area. Over 15,000 chest films annually are being received by Chest Clinics from country centres for reporting.

STATE OF THE REGISTER

Five hundred and fourteen patients were removed from the “active” register, 424 because their disease was sufficiently controlled, 18 having left the State and 72 having died (mostly from causes other than tuberculosis), leaving 1,043 manes on the Register at the end of the year.

An analysis of all persons notified since about 1920 was begun with the following progressive results :—

(a) On “ active ” Register at 31.12.65	....	....	....	....	....	....	....	1,043
(b) Previously on “ Active” Register, episode of active disease being fully documented :—								
Living in the State	....	....	....	....	....	....	....	2,883
Left the State	....	....	....	....	....	....	....	746
Dead	....	....	....	....	....	....	....	2,027
Untraceable	....	....	....	....	....	....	....	33

Some patients who had become lost to Chest Clinics in the early years were again brought under supervision.

Three thousand six hundred notifications remain to be analysed. The majority of these were very early notifications of patients of whom a great number are now dead.

RENOTIFIED PATIENTS

Of the patients placed on the “active” Register during the year, 25, that is 14 per cent., were renotifications. These patients are classified as follows :—

(a) Diagnosis of tuberculosis not established at time of original notification	....	7
(Including one who was renotified when for the first time he developed progressive pulmonary disease due to group III atypical mycobacteria)		
(b) Diagnosis established at time of original notification		
1. Had never received chemotherapy	....	6
2. Had received inadequate chemotherapy—	....
Without surgery	....	5
With surgery	....	2
3. Had received adequate chemotherapy	....	2
(One of these patients had had a resection and the other had combined pulmonary and renal tuberculosis).		
(c) Renotified on account of transfer back to the State	....	2
(d) Infection with a new strain (atypical Group II)	....	1
(This patient had previously been treated adequately for true tuberculosis)		

Fifteen of the above cases represented true reactivations of M. tuberculosis infections in previously established active disease. This relapse rate of approximately 4.3 per thousand was less than it has been (for instance eight per thousand in 1964).

DEATHS

The 12 classified tuberculosis deaths were caused by progressive pulmonary infection due to :—

(a) M. tuberculosis (includes one case of silico-tuberculosis)	....	4
(b) Atypical mycobacteria Group III	....	1
(c) Old healed tuberculosis with extensive fibrosis and cor pulmonale	....	7

INFECTION RATES IN THE COMMUNITY

A large number of comparative skin tests have been carried out in the last two or three years using various mycobacterial antigens, with a view to assessing reactor rates as pointers to the progress of the Tuberculosis Campaign. Results indicate that at present between three per cent. and four per cent. of 14 year olds react to a degree which suggests that they have been infected by M. tuberculosis.

CLINICAL TUBERCULOSIS IN CHILDREN

These children can reasonably be accepted as sensitive indicators of infectious adults at large in the population. Apart from glandular infections there has been a marked decline. In 1956 no children under 15 years were reported with pulmonary or other serious forms of tuberculosis. This is no doubt due to the sustained effort to establish early diagnosis and effect treatment of infectious adults and to institute chemotherapy or vaccination of child contacts where required.

MYCOBACTERIAL INFECTION OF LYMPH NODES

Ten cases of mycobacterial lymphadenitis were reported—six in young children and four in adults. Of the children concerned, one had a Battey infection proven bacteriologically, cultures being negative in the remaining five. Comparative skin tests suggested that three of the five had been infected with Battey organisms, and one with M. Tuberculosis, while one was not skin tested though section of the glands showed a tuberculosis histology.

Of the four adults with gland enlargements, three had proven M. tuberculosis infections, comparative skin tests in the remaining one suggesting a possibility of true tuberculosis.

These findings suggest that true tuberculosis infection of glands in children does not now often occur, though this seems not to be true for adults.

BACTERIOLOGY AND DRUG TREATMENT

Seventy-five per cent. of the notified cases were found to be bacillary positive at initial investigation.

Drug Resistance

Of the patients who excreted M. tuberculosis during the year, 10 (8.7 per cent.) were either already resistant or became resistant to Streptomycin, seven (6.1 percent.) to P.A.J. and 10 (8.7. percent.) to Isoniazid. Two (1.7. per cent.) were resistant to two of the standard drugs and seven (6.1 per cent.) to all three. One patient showed primary resistance to Streptomycin and one to P.A.S.

Of the patients who were reported with progressive disease due to Battey organisms, all were resistant to standard anti-tuberculosis drugs and sensitivity to second line drugs was unusual. However, several strains showed in vitro sensitivity to B663 (Riminophenazine) and Ethambutol.

Second Line Drugs in Treatment

Ethambutol was first used in the State in April 1965 in the treatment of resistant tuberculosis cases and it seems that this drug is a useful addition to the armamentarium.

Several patients with Battey disease were treated with B663 and Ethambutol. B663 administration alone appears to have little effect, but the combination with Ethambutol gives some promise.

MASS COMPULSORY CHEST SURVEYS

The following Shires were surveyed, all persons 21 years of age and over being required to attend.

Bruce Rock	Koorda	Quairading
Broome		
	Merredin	Tammin
Cunderdin	Mukinbudin	Trayning
Corrigin	Mt. Marshall	Tableland
Cue	Marble Bar	
	Meekatharra	Westonia
Dowerin	Mt. Magnet	Wyalkatchem
		Wanneroo
Halls Creek	Narembeen	Wiluna
	Nungarin	West Kimberley
Kellerberin	Nullagine	Wyndham—East Kimberley
Kulin		
Kondinin	Perth	Yilgarn
		Yalgoo

The Kimberley survey, which was conducted in the latter half of the year, involved a great deal of planning and co-operation from district medical officers, local authorities and others. Aborigines were included in the survey. Two units were used ; one an X-ray machine housed in a semi-trailer with generator attached, the other a transportable battery operated unit which was flown to sites inaccessible by road, such as pastoral stations, missions and inlands.

In all 64,025 persons attended for X-ray, the incidence of active tuberculosis being 0.4 per 1,000 micro-films.

From the beginning of 1966 the lower age limit for compulsory chest X-ray was raised from 21 to 25 years Previously minimum ages were :—

1952–1959	....	....	16 years
1959–1960	....	....	18 years
1960–1065	....	....	21 years

Precautions against unnecessary population exposure as recommended by the National Radiation Advisory Council have been anticipated by some years.

PERSONS BORN OUTSIDE AUSTRALIA

The higher incidence amongst this group as compared with the Australian born as has been shown in figures over the last five or six years was maintained and infectious cases were found amongst recently arrived full fare paying passengers from Britain.

Difficulties that have occurred in the past regarding checking of names of new arrivals in the State for the purposes of compulsory chest X-ray as required under the Health Act were again experienced because ship and plane passenger lists supplied to the Department were quite inadequate. In order to achieve a satisfactory cover, these lists should be sufficiently detailed to enable us to eliminate short term passengers, returning Australians and children. The following figures are of interest :—

Estimated number of new arrivals in 1965 required to be X-rayed	....	19,300
Attended as a result of pamphlet distribution at disembarkation point		1,960
Attended following first reminder notice	....	4,879
Attended following second reminder notice	....	149
TOTAL ATTENDANCES		6,988(35 per cent.)

This means that approximatley 12,000 persons, including a large group of British full fare paying passengers who were not submitted to medical examination prior to embarkation, were not X-rayed on reaching this country despite much effort on the part of the Department.

VISITING SISTERS AND DOMICILIARY CHEMOTHERAPY

Three hundred and fifty-six patients were on home drug treatment during the year, including 29 on second line drugs. Three thousand seven hundred and fourteen visits were made to patients in their homes and 486 visits to those in hospital.

The patients have been assessed for realiability as follows :—

Reliable drug takers	....	300
Fair	....	35
Poor	....	21

F. G. B. EDWARDS, B.A., LL.B., M.B., B.S., F.C.C.P.

Table 1
TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Popu- lation 1,000s.	Notifications				No. on Register (Pulm.) at 100,000 31st Dec	No. on Register per 100,000 ance at	Number Receiv- ingT.B. Allow- Pulm.	Deaths			Death Rfite per 100,000	
		Pulm. (incl. Pleural effus.)	Non- Pulm.	Total	Pulm. per 100,000				Pulm.	Non- Pulm.	Total	Pulm.	All Forms
1950	558	586	18	604	104.8	2,100	376	515	125	3	128	22.4	22.9
1951	580	467	37	504	80.4	2,402	413	474	76	6	82	13.1	14.1
1952	601	508	49	557	84.5	2,574	428	396	75	7	82	12.5	13.6
1953	621	378	34	412	60.6	2,762	445	361	43	3	46	6.9	7.4
1954	640	348	34	382	54.3	2,769	432	326	57	4	61	8.9	9.5
1955	659	413	39	452	62.7	2,965	450	330	31	2	33	4.7	5.0
1956	677	424	44	468	62.6	2,900	428	264	43	3	46	6.3	6.8
1957	692	332	32	364	47.9	2,786	403	198	36	1	37	5.2	5.3
1958	706	355	24	379	50.3	2,726	386	213	22	4	26	3.1	3.4
1959	726	320	34	354	44.1	2,684	369	182	24	....	24	3.3	3.3
1960	731	296	34	330	40.5	2,388	327	148	29	1	30	4.0	4.1
1961	737	209	41	250	28.4	1,349	183	89	18	1	19	2.4	2.6
1962	755	243	25	268	32.2	1,333	177	90	24	4	28	3.2	3.7
1963	773	216	28	244	27.9	1,218	158	92	13	....	13	1.7	1.7
1964	790	176	32	208	22.3	1,221	154	88	20	....	20	2.5	2.5
1965	806	153	25	178	19.0	919	114	65	12	....	12	1.5	1.5

Table 2
ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year		Parenchymal Disease						Pleural Effusion		Total
		Minimal		Moderately Advanced		Advanced				
			%		%		%		%	
1952	....	122	24.0	275	54.1	101	19.9	10	2.0	508
1953	....	98	25.9	210	55.5	65	17.2	5	1.4	378
1954	....	96	27.6	178	51.1	74	21.3	....	....	348
1955	....	11	26.9	225	54.5	64	15.5	13	3.1	413
1956	....	127	38.0	217	51.1	72	17.0	8	1.9	424
1957	....	102	30.7	163	49.1	61	18.4	6	1.8	332
1958	....	91	25.6	187	52.7	72	20.3	5	1.4	355
1959	....	103	32.2	151	47.2	55	17.2	11	3.4	320
1960	....	89	30.1	144	48.6	49	16.6	14	4.7	296
1961	....	90	43.1	73	34.9	34	16.3	12	5.7	209
1962	....	117	48.1	84	34.6	36	14.8	6	2.5	243
1963	....	99	45.8	89	41.2	26	12.0	2	1.0	216
1964	....	71	40.3	81	46.0	23	13.1	1	0.6	176
1965	....	75	49.0	60	39.2	17	11.1	1	0.7	153

* Classified according to Diagnostic Standards N.T.A.

Table 3
TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDED 31st DECEMBER, 1965
Showing Age, Sex, Form and Stage of Disease

Group	Males					Females					Persons					Total
	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary			Non-Pulm.	Pleur. Effus.	
	Min.	Mod.	Adv.			Min.	Mod.	Adv.			Min.	Mod.	Adv.			
0- 4 ....	....	....	....	....	....	....	....	....	3	....	....	....	....	3	....	3
5- 9 ....	....	....	....	1	....	....	....	....	2	....	....	....	....	3	....	3
10-14 ....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
15-19 ....	....	1	....	....	....	1	2	....	....	....	1	3	....	....	....	4
20-24	1	....	....	....	....	1	....	....	2	....	2	....	....	2	....	4
25-29	3	2	....	1	....	1	1	1	1	....	4	3	1	2	....	10
30-34	1	2	....	....	....	2	1	....	....	....	3	3	....	....	....	6
35-39	2	1	1	1	....	3	3	....	1	....	5	4	1	2	....	12
40-44	5	6	1	2	....	6	....	....	1	....	11	6	1	3	....	21
45-49	6	4	2	1	....	....	3	....	2	....	6	7	2	3	....	18
50-54	9	5	2	....	....	1	1	1	1	....	10	6	3	1	....	20
55-59	11	7	....	1	....	....	1	....	1	....	11	8	....	2	....	21
60-64	4	5	2	....	....	2	3	....	....	....	6	8	2	....	....	16
65-69	4	2	2	....	....	2	1	....	2	....	6	3	2	2	....	13
70-74	4	5	1	....	....	2	....	....	....	....	6	5	1	....	....	12
75-	2	4	3	....	1	2	....	1	2	....	4	4	4	2	1	15
Total	52	44	14	7	1	23	16	3	18	....	75	60	17	25	1	178

Table 4
ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1965
A. Pulmonary Tuberculosis
(excluding Pleural Effusions)

Activity								Number on Register according to original extent of lesions			Total
								Minimal	Moderate	Advanced	
Active ....	....	....	....	....	....	....	....	69	76	24	169
Inactive—											
0-1 year ....	....	....	....	....	....	....	....	45	31	17	93
1-2 years ....	....	....	....	....	....	....	....	56	63	15	134
2-3 years ....	....	....	....	....	....	....	....	99	70	22	191
3-4 years ....	....	....	....	....	....	....	....	76	58	22	156
4-5 years ....	....	....	....	....	....	....	....	63	71	25	159
5+ years ....	....	....	....	....	....	....	....	0	3	1	4
Total ....	....	....	....	....	....	....	....	408	372	126	906
B. Pleural Effusions ....								....	....	....	13
C. Non-Pulmonary Tuberculosis ....								....	....	....	124
Total (all forms) ....								....	....	....	1,043

Table 5
WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1958-1965 : MALES

Country of Birth	Population at June 30, 1961: Thousands (Census)	Incidence per Thousand Persons								Total Notifications, 1958-1965
		1958	1959	1960	1961	1962	1963	1964	1965	
United Kingdom and Republic of Ireland	44.4	1.53	0.89	1.00	0.92	0.93	0.66	0.67	0.61	322
Germany	2.7	....	....	0.74	0.74	0.37	....	....	....	5
Greece	2.3	3.33	1.36	0.45	0.87	0.87	0.43	....	....	16
Italy	14.9	1.18	1.00	1.51	1.01	0.91	0.70	0.60	0.47	108
Netherlands	6.2	0.71	0.17	0.17	0.16	0.64	0.31	....	0.16	14
Poland	2.8	1.72	2.76	1.79	2.50	0.33	1.85	1.07	....	34
Yugoslavia	3.6	2.72	2.94	2.85	1.39	1.08	1.58	1.11	1.11	52
Other European	5.7	1.90	0.17	0.86	1.40	1.05	0.70	1.05	0.70	45
Other Birthplaces	8.1	1.45	1.04	2.02	0.86	1.09	1.19	0.74	1.23	77
Total non-Australian born	90.7	1.48	0.95	1.19	0.97	0.89	0.74	0.64	0.58	673
Australian-born*	284.8	0.51	0.62	0.49	0.30	0.37	0.34	0.31	0.22	903

* Full-blood aborigines excluded.

Table 6

WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1958-1965 : FEMALES

Country of Birth	Population at June 30, 1961: Thousands (Census)	Incidence per Thousand Persons								Total Notifications, 1958-1965
		1958	1959	1960	1961	1962	1963	1964	1965	
United Kingdom and Republic of Ireland	38.9	0.57	0.47	0.41	0.23	0.29	0.31	0.26	0.36	112
Germany	2.9	0.71	0.36	....	0.34	....	0.34	....	....	5
Greece	1.8	0.62	0.59	....	0.55	0.52	0.50	1.11	....	7
Italy	10.3	0.48	0.55	0.31	0.68	0.27	0.26	0.09	0.58	32
Netherlands	5.0	....	0.22	0.21	....	0.39	....	....	....	4
Poland	1.9	1.00	2.63	0.53	0.53	0.56	....	2.10	....	14
Yugoslavia	2.3	0.50	0.95	0.45	....	1.67	1.60	....	0.43	13
Other European	4.0	0.51	1.25	1.50	0.75	0.73	....	0.25	0.75	23
Other Birthplaces	6.6	0.82	0.16	0.31	0.45	0.29	0.14	0.45	0.15	18
Total non-Australian born	73.7	0.56	0.55	0.42	0.34	0.36	0.29	0.28	0.34	228
Australian-born*	287.4	0.25	0.21	0.19	0.16	0.16	0.13	0.14	0.12	387

*Full-blood aborigines excluded.

Table 7

NOTIFICATIONS OF BRITISH FULL-FARE PAYING PASSENGERS

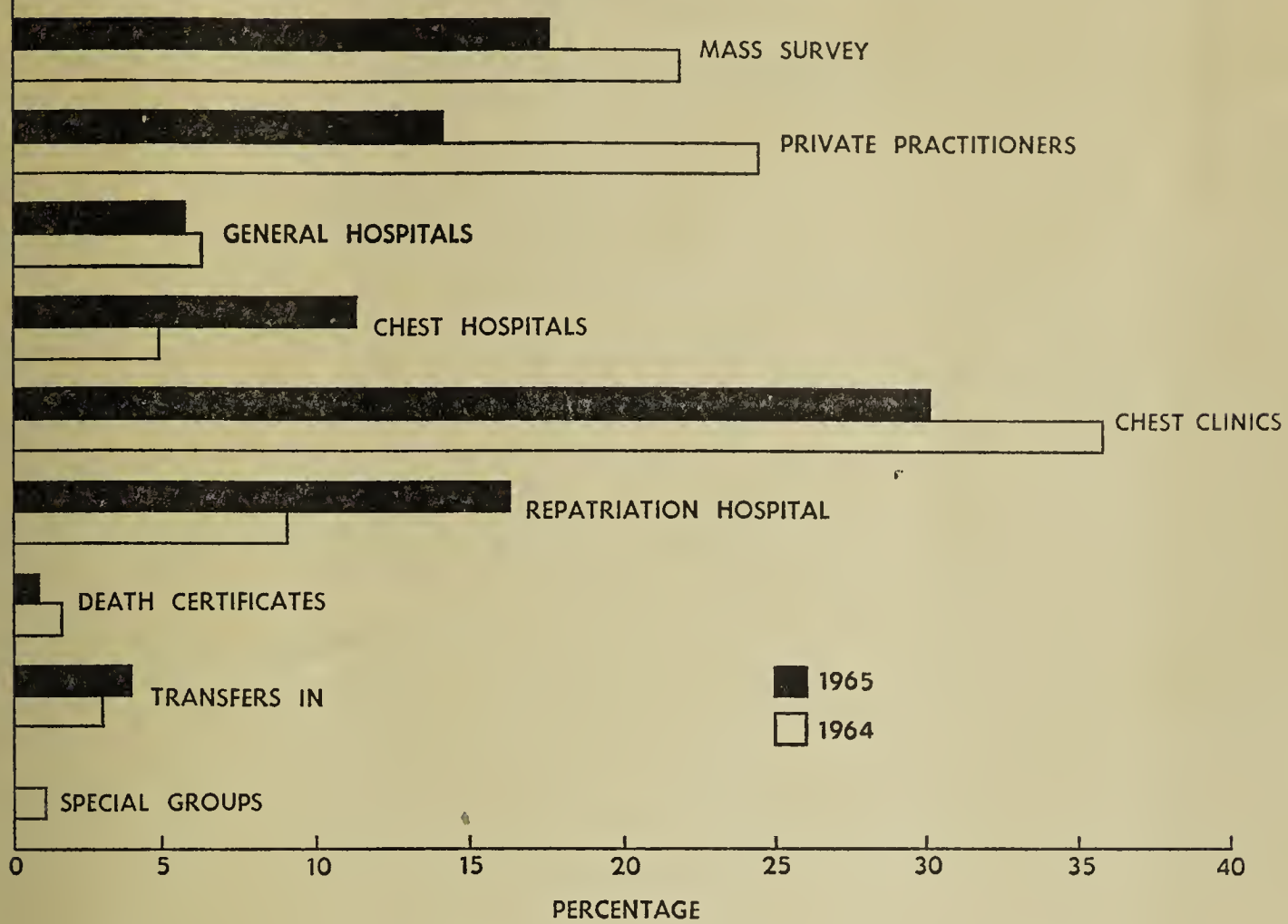
Year of Notification	Persons Notified				Total
	Within One Year of Arrival	One to Five Years after Arrival	Five to Ten Years after Arrival	More than Ten Years agter Arrival	
1958	1	6	3	59	69
1959	4	1	6	32	43
1960	1	1	4	44	50
1961	2	2	3	35	42
1962	2	2	1	24	29
1963	2	....	1	13	16
1964	3	2	1	13	19
1965	3	1	1	8	13
Total	18	15	20	228	281

Table 8

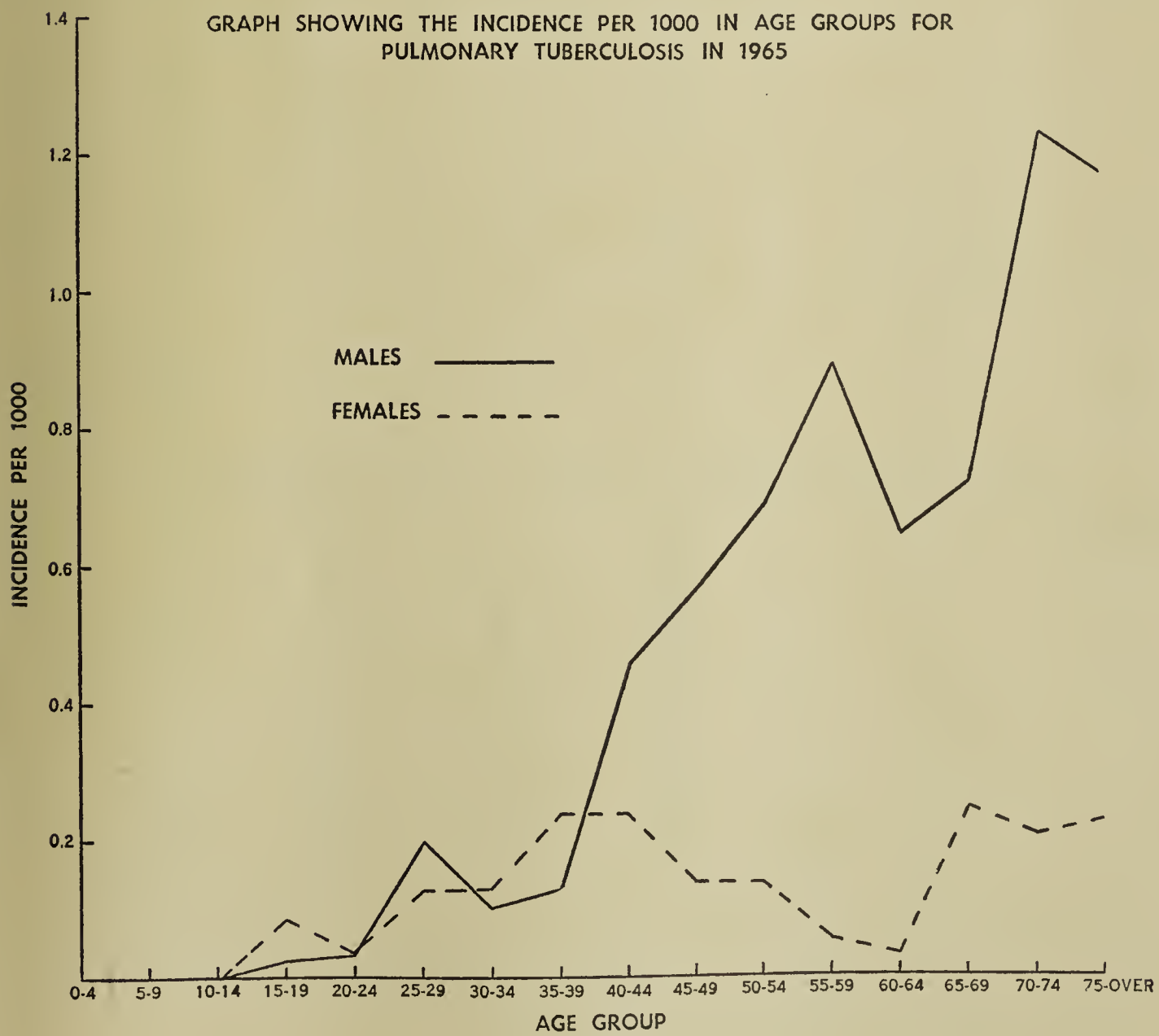
PATIENTS FROM WHOM ATYPICAL MYCOBACTERIA WERE ISOLATED (FOR THE FIRST TIME) IN 1965

Runyon Group	Casual Isolations	Intermittent Isolations	Persistent Isolations			Other	Total
			Atypical Tuberculosis		Total		
I ....	....	....	Pulm. 2	Non-pulm.	2	....	2
II	4	1	2	....	2	....	7
III	19	1	13	1	14	3	37
IV	4	....	....	....	....	....	4
Mixed	1	....	....	....	....	....	1
Total Patients	28	2	17	1	18	3	51

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS PERCENTAGE OF TOTAL NOTIFICATIONS



GRAPH SHOWING THE INCIDENCE PER 1000 IN AGE GROUPS FOR PULMONARY TUBERCULOSIS IN 1965



APPENDIX

Western Australia

PULMONARY TUBERCULOSIS

Year							Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	....	....	....	....	....	....	287	259	90.2	190	66.2
1912	....	....	....	....	....	....	301	429	142.5	220	73.1
1913	....	....	....	....	....	....	313	424	135.5	206	65.8
1914	....	....	....	....	....	....	323	353	109.3	229	70.9
1915	....	....	....	....	....	....	321	336	104.7	233	72.6
1916	....	....	....	....	....	....	313	511	163.5	225	71.9
1917	....	....	....	....	....	....	306	464	151.6	217	70.9
1918	....	....	....	....	....	....	308	432	140.5	245	79.5
1919	....	....	....	....	....	....	320	467	145.9	289	91.6
1920	....	....	....	....	....	....	330	442	133.9	259	78.4
1921	....	....	....	....	....	....	334	424	126.9	277	82.9
1922	....	....	....	....	....	....	341	387	113.8	256	75.1
1923	....	....	....	....	....	....	351	361	102.8	216	61.5
1924	....	....	....	....	....	....	363	381	104.6	228	62.8
1925	....	....	....	....	....	....	373	403	108.4	259	69.4
1926	....	....	....	....	....	....	381	415	108.2	252	66.1
1927	....	....	....	....	....	....	392	409	104.3	231	56.4
1928	....	....	....	....	....	....	408	395	96.8	282	69.1
1929	....	....	....	....	....	....	421	400	95.0	245	53.4
1930	....	....	....	....	....	....	429	569	132.6	218	50.8
1931	....	....	....	....	....	....	432	372	86.1	223	51.6
1932	....	....	....	....	....	....	435	339	77.9	203	46.7
1933	....	....	....	....	....	....	439	295	67.2	207	47.2
1934	....	....	....	....	....	....	442	287	64.9	218	49.3
1935	....	....	....	....	....	....	447	270	60.4	210	47.0
1936	....	....	....	....	....	....	452	338	74.8	193	42.7
1937	....	....	....	....	....	....	457	239	53.0	172	37.6
1938	....	....	....	....	....	....	464	247	53.2	177	38.1
1939	....	....	....	....	....	....	470	202	43.0	179	38.1
1940	....	....	....	....	....	....	473	231	48.8	181	38.3
1941	....	....	....	....	....	....	474	154	32.5	185	39.0
1942	....	....	....	....	....	....	477	113	23.7	175	36.7
1943	....	....	....	....	....	....	477	273	57.3	144	30.2
1944	....	....	....	....	....	....	481	219	45.4	134	27.9
1945	....	....	....	....	....	....	488	271	55.5	149	30.5
1946	....	....	....	....	....	....	493	343	69.6	163	33.1
1947	....	....	....	....	....	....	502	372	74.0	128	25.4
1948	....	....	....	....	....	....	515	325	63.1	157	30.5
1949	....	....	....	....	....	....	533	499	93.6	123	23.1
1950	....	....	....	....	....	....	558	586	104.8	129	23.1

DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST.

1950	....	....	....	....	....	....	558	586	104.8	125	22.4
1951	....	....	....	....	....	....	580	467	80.4	76	13.1
1952	....	....	....	....	....	....	601	508	84.5	75	12.5
1953	....	....	....	....	....	....	621	378	60.6	43	6.9
1954	....	....	....	....	....	....	640	348	54.3	57	8.9
1955	....	....	....	....	....	....	659	413	62.7	31	4.7
1956	....	....	....	....	....	....	677	424	62.6	43	6.3
1957	....	....	....	....	....	....	692	332	47.9	36	5.2
1958	....	....	....	....	....	....	706	355	50.3	22	3.1
1959	....	....	....	....	....	....	726	320	44.1	24	3.3
1960	....	....	....	....	....	....	731	296	40.5	29	4.0
1961	....	....	....	....	....	....	737	209	28.4	18	2.4
1962	....	....	....	....	....	....	755	243	32.2	24	3.2
1963	....	....	....	....	....	....	773	216	27.9	13	1.7
1964	....	....	....	....	....	....	790	176	22.3	20	2.5
1965	....	....	....	....	....	....	806	153	19.0	12	1.5

Appendix IV

B.C.G. Vaccination—Kimberley Division, 1966

In 1950 and 1956, as part of the tuberculosis control programme, many natives in the Kimberley Division were tuberculin tested, negative reactors being given B.C.G. vaccination :—

1950—Percentage of positive reactors (all ages)	....	....	....	....	....	....	38%
Number of positive reactors (all ages)	....	....	....	....	....	....	1,087
1956—Percentage of positive reactors (all ages)	....	....	....	....	....	....	10%
Number of negative reactors vaccinated	....	....	....	....	....	....	2,038

(The figures for 1956 however include some who were tested in the Port Hedland and Carnarvon areas).

This year it was decided to carry out a survey in the Kimberleys and Sister M. Duggan of this Branch toured the larger centres between August 8th and September 22nd, the object being to B.C.G. vaccinate as many native children as possible between the ages of three weeks and fifteen years. As well as conferring partial immunity against tuberculosis it was hoped to confer a measure of immunity to Hansen’s disease.

According to the Eighth Report of the W.H.O. Expert Committee on Tuberculosis, 1964 (Report No. 290, page 11), direct B.C.G. vaccination, that is vaccination without prior tuberculin testing, ‘had not demonstrated local, regional focal or general complications detrimental to the health of tuberculin reactors among vaccinated individuals’. In order to confirm this observation under local conditions, it was decided to carry out preliminary tests on a number of known tuberculin positive children and young adults at Beagle Bay prior to embarking on direct vaccination of a large number of children. This particular group was chosen because of recent close contact with two active tuberculosis cases and because many natives had had contact with, or were children of, known cases of Hansen’s disease. The tuberculin reactor rate among Beagle Bay adults was found to be 32.37, percent, and in the children 6.9 percent. B.C.G. vaccination was then carried out on all young negative reactors at this Mission. Seven percent of these bore the scar of a previous B.C.G. inoculation. In addition to these negative reactors, B.C.G. was given to 24 deliberately chosen positive tuberculin reactors, who were then closely watched for ten days. No unusual sequelae were observed, and subsequent reports from this centre and others support the claim that direct vaccination is not detrimental.

Tuberculin testing prior to B.C.G. vaccination was also carried out at Wyndham, Kalumburu and Forrest River, only negative reactors being vaccinated in these areas. Many of these children were contacts of patients with Hansen’s disease. Positive reactors were as follows :—

Wyndham	....	....	....	2.1%
Forrest River	....	....	....	3.1%
Kalumburu	....	....	....	4%
Beagle Bay	.....	....	....	6.9%

The non-reactors vaccinated were :—

									Vaccinated In previous Surveys, now Reverted to Negative	Not Previously Vaccinated
Wyndham	....	....	....	....	....	....	....	....	12	154
Forrest River	....	....	....	....	....	....	....	....	7	27
Kalumburu	....	....	....	....	....	....	....	....	13	67
Beagle Bay	....	....	....	....	....	....	....	....	52	180

Direct B.C.G. vaccination, that is, without preliminary tuberculin testing, was given to native children at the following centres :—

									Previously Vaccinated	Not Previously Vaccinated
Lombardina	....	....	....	....	....	....	....	....	....	63
La Grange	....	....	....	....	....	....	....	....	13	81
Broome	....	....	....	....	....	....	....	....	5	247
Derby	....	....	....	....	....	....	....	....	76	324
Fitzroy Crossing	....	....	....	....	....	....	....	....	2	111
Go Go	....	....	....	....	....	....	....	....	24	106
Brooking Springs	....	....	....	....	....	....	....	....	....	17
Cherrebun	....	....	....	....	....	....	....	....	14	45
Christmas Creek	....	....	....	....	....	....	....	....	2	26
Leopold Downs	....	....	....	....	....	....	....	....	....	3
Kunnunurra	....	....	....	....	....	....	....	....	4	68
Halls Creek	....	....	....	....	....	....	....	....	23	152

In all, 1671 native children were vaccinated. 247 of these having received B.C.G. on a previous occasion, 1424 being vaccinated for the first time.

(F. G. B. Edwards)
DIRECTOR TUBERCULOSIS CONTROL BRANCH

Appendix V

Epidemiology and Special Services

ANNUAL REPORT, 1965

In general the level of communicable disease control remained high during 1965, and notifications for Diphtheria (2), Tetanus (1) and Poliomyelitis (nil) were the lowest on record. This may be regarded as satisfactory proof of the efficacy of widespread prophylactic immunisation against such conditions.

Notifications of infective Hepatitis (83) were also at their lowest for many years.

However, reports of bowel infections continued at a high level, and the increasing incidence of Gonorrhoea is causing concern in this State as well as many overseas countries.

Immunisation

(a) Poliomyelitis

During the year a further 61,243 doses of Salk Vaccine were administered, bringing the total given since 1956 to 1,934,744, including 10,134 injections of Quadruple Antigen given in 1961.

It is not expected that the yearly total of injections will vary greatly from the above figure, as the majority of adults wishing to be immunised have completed their courses, and most of the work is now concentrated amongst newborn infants. This may be illustrated by the fact that 85.1% of Salk Vaccine courses commenced during the year involved infants up to four years of age.

For the second year in succession, no confirmed case of poliomyelitis was reported in Western Australia, and this fact is no doubt responsible to some extent for the comparative apathy that exists among adults towards Poliomyelitis vaccination. However in spite of this, more than half a million persons in this State have now received either three or four injections of Salk Vaccine

ANNUAL SALK INJECTIONS SINCE 1st JULY, 1956, WHEN SALK VACCINATION BEGAN

Year										No. of Separate Injections
1956	....	....	....	....	....	....	....	....	....	224,466
1957	....	....	....	....	....	....	....	....	....	415,166
1958	....	....	....	....	....	....	....	....	....	273,017
1959	....	....	....	....	....	....	....	....	....	309,914
1960	....	....	....	....	....	....	....	....	....	140,590
1961	....	....	....	....	....	....	....	....	....	59,964*
1962	....	....	....	....	....	....	....	....	....	177,989
1963	....	....	....	....	....	....	....	....	....	203,754
1964	....	....	....	....	....	....	....	....	....	68,641
1965	....	....	....	....	....	....	....	....	....	61,243
Total	....	....	....	....	....	....	....	....	....	1,934,744

* Includes 10,134 Quadruple Antigen injections in 1961.

(B) Other Diseases

Immunisation against diseases other than Poliomyelitis, including Diphtheria, Tetanus and Whooping Cough, increased during the year, and a total of 18,905 of these injections were given—a fourfold increase since 1963, and 43 per cent more than last year. It is considered that the public is far more immunisation conscious than a few years ago, and the number of infants that do not receive at least the initial course of three Triple Antigen injections would be small.

Immunisation clinics have been provided for several missions, orphanages, homes and other institutions, while the Mobile Units in the country have continued giving Triple Antigen, C.D.T. and Tetanus Toxoid on request, and in remoter areas without regular medical services.

Medical Examinations

During the year 832 general medical examinations were carried out for applicants joining the State Public Service, and for entrants to the Teacher Training Colleges.

Trachoma Control

The activities of the Trachoma Sisters during 1965 were concentrated in the Great Southern and Agricultural divisions of the State. Treatment of infectious cases was based where possible on the “Intermittent Local Therapy Regime” which involves repeated courses of antibiotic eye drops spread over a period of five months.

Results of diagnosis among the coloured people in the above areas are seen in Table 1.

When these figures are compared with previous years (Table 2.) it will be seen that there is a decrease in activity among all age groups, although because of a disproportionately low number of adults examined, the total activity shows an increase of 1.6 per cent over 1964.

These results are encouraging, and indicate that the original hope of a gradual lessening of Trachoma activity as part od a long term plan to control the condition, may eventually be realized.

Venereal Disease

1965 saw a renewal of the upsurge of notifications of Venereal Disease, the number increasing by 59 to a total of 462, this figure being the highest since 1945, but still well below the peak reached in 1933 when 1376 cases were notified. The increase is due entirely to more cases of Gonorrhoea being reported, as the figures for Syphilis showed a further decrease to a total of only nine cases for the year.

The incidence among teenagers has dropped slightly to 23 per cent of the total—a decrease of 3 per cent from 1964.

During the year the Department was represented on a committee formed under the auspices of the Federal Council of the Australian Medical Association to investigate the problem of Venereal Disease in this State. The Committee has put forward several recommendations which have been relayed to the Federal Council for correlation with suggestions made by similar committees in all other States. By this means it is hoped to attack this Australia—wide problem at a Federal level.

ANALYSIS OF NUMBERS OF SALK INJECTIONS

1st July, 1956, to 31st December, 1965

Age Group						4th Injection	3rd Injection	2nd Injection	1st Injection	Total Injections
Under 15 years ....	....	....	....	....	....	159,448	281,553	320,001	335,956	1,096,958
15 years and over	....	....	....	....	....	112,751	220,267	235,006	259,628	827,652
All Ages ....	....	....	....	....	....	272,199	501,820	555,007	595,584	1,924,610

In addition to the above total, 10,134 injections of Quadruple Antigen (containing Salk Vaccine) were given in 1961, making the grand total of 1,934,744 separate injections in this State.

SALK VACCINATION STATUS W.A.

Ages adjusted to 31st December, 1965.

Age Groups						Number of Persons who have received				
						Four Injections	Three Injections Only	Two Injections Only	One Injections Only	1st, 2nd. 3rd. and 4th Injections
Under 15 years ....	....	....	....	....	....	153,387	95,554	30,143	15,773	294,857
15 years and over	....	....	....	....	....	118,812	134,067	23,044	24,804	300,727
Total, All Ages ....	....	....	....	....	....	272,199	229,621	53,187	40,577	595,584

POLIOMYELITIS INCIDENCE

(Since Salk Vaccination began on 1st July, 1956)

Year						Not Vaccinated		Vaccinated		Total
						Non-Paralytic	Paralytic	Non-Paralytic	Paralytic	
1956	....	....	....	....	....	1	1	....	....	2
1957	....	....	....	....	....	....	3	....	....	3
1958	....	....	....	....	....	....	1	....	....	1
1959	....	....	....	....	....	....	2	....	3	5
1960	....	....	....	....	....	....	3	....	....	3
1961	....	....	....	....	....	....	2	....	....	2
1962	....	....	....	....	....	....	3	....	1	4
1963	....	....	....	....	....	....	3	....	2	5
1964	....	....	....	....	....	....	....	....	....	....
1965	....	....	....	....	....	....	....	....	....	....
Total	....	....	....	....	....	1	18	....	6*	25

* 1 dose 2
2 doses 1
3 doses 2
4 doses 1

Case No.				Year	Sex	Age	Virus Type	Vaccination Status		
1	....	....	....	1956	M.	24	....	Unvaccinated		
2	....	....	....	1956	M.	28	....	Unvaccinated		
3	....	....	....	1957	M.	7	....	Unvaccinated		
4	....	....	....	1957	M.	10	....	Unvaccinated		
5	....	....	....	1957	M.	23	....	Unvaccinated		
6	....	....	....	1958	M.	40	....	Unvaccinated		
7	....	....	....	1959	M.	2	III	3 doses (onset 3 days after third dose)		
8	....	....	....	1959	M.	3/12	....	Unvaccinated		
9	....	....	....	1959	M.	2	....	2 doses		
10	....	....	....	1959	F.	3	....	1 dose		
11	....	....	....	1959	M.	7	III	Unvaccinated		
12	....	....	....	1960	M.	7/12	....	Unvaccinated		
13	....	....	....	1960	M.	3	I	Unvaccinated		
14	....	....	....	1960	M.	1½	I	Unvaccinated		
15	....	....	....	1961	F.	2	I	Unvaccinated		
16	....	....	....	1961	M.	3	III	Unvaccinated		
17	....	....	....	1962	F.	41	I	Unvaccinated		
18	....	....	....	1962	F.	3	III	3 doses (onset 2 years after third dose)		
19	....	....	....	1962	F.	28	III	Unvaccinated		
20	....	....	....	1962	M.	37	III	Unvaccinated		
21	....	....	....	1963	M.	11	III	Unvaccinated		
22	....	....	....	1963	F.	35	....	1 dose		
23	....	....	....	1963	M.	2	III	Unvaccinated		
24	....	....	....	1963	M.	5	II	4 doses (onset 6 months after fourth dose)		
25	....	....	....	1963	M.	26	II	Unvaccinated		
				1964	Nil	....	....	....
				1965	Nil	....	....	....

Table 1
TRACHOMA ACTIVITY, 1965

1964		0-4 Years			5-9 Years			10-14 Years			Over 14 Years			Total		
Area		Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
Lower Southern	Great	309	215	69.6	363	179	49.3	267	47	17.6	73	0	0	1,012	441	43.6
Upper Southern	Great	287	169	58.9	285	124	43.5	190	33	17.4	9	1	11.1	771	327	42.4
Northern	Agri-	234	156	66.7	331	150	45.3	268	27	10.1	22	....	....	855	333	38.9
cultural	....														
Central	Agri-	243	135	55.5	220	81	36.8	144	15	10.4	9	....	....	616	231	37.5
cultural	....														
Total	....	1,073	675	62.9	1,199	534	44.5	869	122	14.0	113	1	0.9	3,254	1,332	40.9

Table 2

			0-4 Years			5-9 Years			10-14 Years			Over 14 Years			Total		
Year			Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
1962	....	....	1,422	1,159	81.5	1,728	1,194	69.1	1,209	457	37.8	845	146	17.3	5,204	2,956	56.8
1963	....	....	718	493	68.7	679	405	59.6	414	114	27.5	192	15	7.8	2,003	1,027	51.3
1964	....	....	843	542	64.3	878	471	53.6	674	114	21.4	589	15	2.5	2,983	1,172	39.3
1965	....	....	1,073	675	62.9	1,199	534	44.5	869	122	14.0	113	1	0.9	3,254	1,332	40.9

Table 1																
VENEREAL DISEASE, W.A., 1957-1966																
Year					Gonorrhoea	Syphilis (All Types)	Granuloma (Inguinale)	Chancroid	Venereal Disease (All Forms)							
1957	....	....	....	....	213	14	1	....	228							
1958	....	....	....	....	148	5	....	1	154							
1959	....	....	....	....	72	8	....	1	81							
1960	....	....	....	....	87	6	....	....	93							
1961	....	....	....	....	119	17	....	....	136							
1962	....	....	....	....	283	16	....	....	299							
1963	....	....	....	....	362	28	....	....	390							
1964	....	....	....	....	392	11	....	....	403							
1965	....	....	....	....	453	9	....	....	462							
1966	....	....	....	....	690	20	....	....	710							
Total	....	....	....	....	2,819	134	1	2	2,956							

Table 2																					
Year					Age Groups																
					15-19	20-24	25-29	30-34	35 and over	Age not stated											
1958	....	....	....	....	% 6	% 24	% 26	% 20	% 23	% 1							
1959	....	....	....	....	7	25	15	19	32	2							
1960	....	....	....	....	18	19	9	13	29	12							
1961	....	....	....	....	10	30	17	18	22	3							
1962	....	....	....	....	18	32	15	11	20	4							
1963	....	....	....	....	24	30	13	11	21	1							
1964	....	....	....	....	26	30	15	9	18	2							
1965	....	....	....	....	23	31	17	10	16	3							
1966	....	....	....	....	19·7	31·1	17·6	11	15·5	5							

Table 3																
		Male					Female					Total				
		1962	1963	1964	1965	1966	1962	1963	1964	1965	1966	1962	1963	1964	1965	1966
SYPHILIS—																
Primary	....	4	6	2	3	12	2	6	4	1	2	6	12	6	4	14
Secondary	....	2	1	1	1	3	....	5	1	2	1	2	6	2	3	4
Tertiary	....	5	2	1	....	....	2	4	1	2	2	7	6	2	2	2
Congenital	....	....	1	....	....	....	1	3	1	....	....	1	4	1	....	....
Total—																
Syphilis	....	11	10	4	4	15	5	18	7	5	5	16	28	11	9	20
Gonorrhoea	....	223	287	329	379	600	60	75	63	74	90	283	362	392	453	690
Granuloma	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chancroid	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total—																
Venereal Disease		234	297	333	383	615	65	93	70	79	95	299	390	403	462	710

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Table 4
VENEREAL DISEASE—WESTERN AUSTRALIA

Year	Male Age Groups						Total
	15-19	20-24	25-29	30-34	35 and Over	Age not Stated	
1958	5	35	34	25	28	1	128
1959	3	21	12	14	19	2	71
1960	9	13	7	11	23	10	73
1961	13	35	20	19	30	4	121
1962	32	82	35	26	48	11	234
1963	64	94	43	29	59	8	297
1964	70	98	57	33	63	12	333
1965	73	118	73	44	62	13	383
1966	101	205	113	67	96	33	615

VENEREAL DISEASE—WESTERN AUSTRALIA

Year	Female Age Group						Total
	15-19	20-24	25-29	30-34	35 and Over	Age not Stated	
1958	5	4	4	6	6	....	25
1959	2	....	....	2	5	....	9
1960	8	5	1	1	5	....	20
1961 ....	....	5	3	5	2	....	15
1962	23	14	9	6	13	....	65
1963	27	23	8	12	18	5	93
1964	32	19	7	2	10	....	70
1965	33	20	8	1	16	1	79
1966	39	16	12	11	14	3	95

Appendix VI

Activities of the Infant and Pre-School Health Services

Sir,
I have the honour to submit a report on Infant and Pre-School Health for 1965.

(1) *Infant Health Centres*

The number of main centres in which sisters worked (68 plus 4 caravans) remained the same as for 1964. There were 40 city centres and 28 country and 4 caravans on the outskirts of the metropolitan area.

New sub-centres opened during the year in the metropolitan area were, Millen, City Beach, Riverton and South Bentley.

In the country a new centre in the Town Hall in Bunbury replaced the old rooms there, and one was opened in Kukerin. Most of the metropolitan centres replaced temporary sub-standard centres. As well as the 40 main centres in the metropolitan area there are a number of sub-centres, the total for both being 115. Of these 33 (28.5 percent) are considered unsatisfactory. Not only are most of them inconvenient for both mothers and sisters, but many fall below the standards of hygiene required for the sort of health education work that the sisters are doing.

Most sisters would like to do more home visiting but staffing does not permit any increase of this without seriously depleting the service given in centres. Australian mothers have become accustomed to the practically invariable availability of sisters in centres at their appointed times. Most of the sisters not only would like to do more home visiting but are certain that a great deal more help could be given were they able to visit more homes more frequently. But none will agree that the benefit to be obtained would justify the reduction in attendance at centres. The only way in which home visiting could be substantially and effectively improved would be by a very considerable increase in staff.

Table 1 is a summary of some of the figures of centre attendances during 1965, the two preceding years figures are included for comparison.

TABLE 1				1965	1964	1963
Birth Notifications received	....	....		13,853	14,934	15,420
Births Registered	....	....	....	16,186	16,685	17,290
Gross Attendances	....	....	....	231,191	243,530	244,912
Individuals attending	....	....	....	31,812	32,662	32,049
Home Visits	....	....	....	26,482	27,131	23,381
Telephone Consultations	....	....		11,833	10,149	10,178

First it will be noted that over the 3 years quoted the total of nearly 6,000 births listed were not notified by midwives. Notification of a birth attended by a midwife (and this includes births in hospitals) is a statutory requirement and this notification is mainly used for making certain that mothers are contacted by a sister in the particular area in which they live. An elaborate method of notification of the sisters has been going on for many years. It occasionally breaks down but has been very useful in making sure of contact with the majority of mothers of newborn babies. It supplements the hospital visiting carried out by special sisters in the 3 major obstetric hospitals and the local sister in smaller hospitals.

It will be noted that individual and gross attendances are again slightly lower than in the previous year.

The pattern of attendances continues to show an increasing awareness of the needs of the pre-school child. As occurred last year, more than one third of the attendances were in this age group.

The usual difficulties occurred with maintaining staff in the country centres. It was necessary on several occasions (as usual) to resort to temporary expedients to maintain service in some of the areas.

The service is coming to depend more and more for recruitment of staff upon the only Infant Health Training School in the State—Ngala Mothercraft Home. When candidates are being selected for the Ngala training course our Service would benefit considerably if preference were given to local candidates or to others who are likely to join the Service in this State.

About 18 sisters undertake the course per annum, there being three schools of six students each. In 1965 there were 7 sisters joined our staff, 4 of these were Ngala graduates and the other three came from other Australian States.

(2) *Correspondence*

There are two sub-divisions in this section.

- (1) Correspondence with mothers and
- (2) Correspondence with school children

In this State many families live in widely scattered and often tiny communities. They depend very extensively on this important branch of the service, staffed usually by 11 full-time sisters and 4 typists.

For quite a long time this service, which is expanding, was restricted by inadequate accommodation at headquarters in Hay Street and the move of the whole headquarters to 16 Rheola Street, West Perth, in October 1965, produced considerable relief. In 1966 there should be a significant increase in the output of the sisters, particularly those dealing with the correspondence teaching of children.

In 1965 the sisters corresponding with mothers received 1869 letters and sent out 7730. The number of infants under one year on the books was 1281 and over 1 year 1037. The Correspondence section teaching parentcraft etc., deals with children in distant schools in towns, stations and missions. Most, but not all, of these children are aboriginal or part-aboriginal. It continues, according to the officers of the Education Department, to fill a very real need in these childrens' education. During the year the section dealt with 1119 pupils, 832 of them being girls and 237 boys.

On 13 country trips each done by two sisters as a pair, as well as visiting mothers who were on correspondence, the sisters visited 644 of the corresponding pupils in schools. Unfortunately the numbers visited in 1965 were considerably reduced by two misfortunes—one a car accident in which two sisters were injured—this accident prevented visits to the Warburton Ranges Mission and to Laverton, and on the other occasion, floods in the Murchison area prevented visits to missions and stations and to Marble Bar.

As predicted last year, there were two areas previously dealt with by Correspondence taken over by local sisters and another is arranged for early in 1966. As these areas close down for Correspondence new ones open up. First contacts were made during the year in Mt. Goldsworthy, Mt. Newman, Mt. Tom Price, King Bay, Exmouth and Finucane Island.

The staff of the Correspondence section are not entirely confined to desk work, a great deal of public relations, teaching, lecturing, in-service training, running the West Perth clinic, the East Perth clinic and Allawah Grove clinic, the writing of pamphlets, composing and delivering broadcasts and a thousand and one other small responsible tasks continually devolve upon them. The sisters who work at 16 Rheola Street cannot complain of lack of variety in their work.

(3) *Mothercraft and Parentcraft*

For most of the year this section had a staff of five teaching mothercraft in secondary schools (both State and private), Perth Technical College, Teachers' Training College, Kindergarten Training College and others including lectures and demonstrations to medical students; 151 groups were taught in the metropolitan area, and country sisters taught in 43 schools. City and country achieved a grand total of 2371 pupils.

It was decided however, in consultation with the Director of Education, to cease this rather incomplete coverage of High Schools after the end of 1966. It is hoped to divert a considerable proportion of the efforts of the sisters in the mothercraft section to classes with groups of expectant parents. These classes, which have been running for some time in the metropolitan area and are commencing in the country, are enormously successful. This term is used advisedly because of the consistently high attendance rate and constant attendance rate of mothers (and in the evening classes of fathers) at these lectures and discussion groups. Efforts will be made considerably to expand this over future years as was suggested in last year's report. It is too soon as yet to expect any great increase but we anticipate considerable expansion of this service after the beginning of 1967 when most of the school classes will have ceased.

(4) *Pre-School Health*

The three sections under which we attack this problem of pre-school health remain un-united. They are the *Pre-School Health Clinics* run by sisters who have been specially trained in this subject; the *Pre-School Health Scheme* which is voluntary for those mothers who want it, and the *Pre-School Health Examinations* in kindergartens and child minding centres. The first section (the pre-school clinics in centres) is continuing to expand and is the major day to day work in pre-school health. The second, the Pre-School Health Scheme, started in 1962 has never been entirely successful. Most general practitioners, who see the children at 6 weeks, 12 months and finally in their 5th year, seem merely to tolerate the scheme. Some are actively unco-operative. It is a fact that the vast majority of significant abnormalities are discovered apart from this pre-school health scheme. The scheme was specifically designed to maintain the interest of the general practitioner in preventive paediatrics and to increase the early discovery of significant, particularly treatable, congenital and other abnormalities. When, as suggested above, the majority of significant abnormalities are discovered before or between these examinations, the examinations themselves tend to become an apparently unproductive routine in which it is difficult to retain interest.

A repetition of the survey done in 1964 will be carried out in 1966 to determine the future of the scheme. It is most important, in the present medical situation, to retain and to increase the general practitioners' interest in preventive paediatrics. If the scheme does this, it is worth while retaining it, otherwise it is not.

The third section concerning pre-school health is extracted from Dr. Ethel Roberts' (pre-school medical officer) report as follows :—

Since 1961 there has been a growing interest and demand for pre-school education. The demand has meant an increase in centres and an increase in the children receiving the pre-school medical examination. The number in 1961 was 3,656 and in 1965 it had increased to 5,031.

The trend has been the establishment of larger kindergartens with good buildings and equipment and the closure of many small private kindergartens. Five small private kindergartens in the metropolitan area closed in 1965 and 3 new large kindergartens opened and in 1966 there will be now 5 centres opening affiliated with the Kindergarten Union. Unfortunately there still remain kindergartens functioning with the minimum requirements of equipment and handicapped by unsuitable premises.

Interest in pre-school education has not been confined to the metropolitan area. The number of country centres is rapidly increasing from 37 in 1961 to 74 in 1965. Of these 74 centers 62 were visited for medical examination.

Day Care Centres : There seems to be an increasing demand for the facilities available for day care of children. There has been no increase in the registration of these centres although many advertisements have been observed in the daily press. It must be assumed that those advertising have had no success or they have made no attempt to register their premises. With the increasing number of working mothers it is felt that there must be a need for day care of infants and young children.

Recommendation made by the joint UN/WHO Expert Committee on the care of well children in Day Care Centre (WHO Technical Report Series No. 256)—

“There should be a programme designed to promote the child's full development—physical, intellectual, emotional and social. Staff members should be adequate in number to provide children with individual care and attention promoting a relaxed and intimate atmosphere. Appropriate play materials and toys which will stimulate motor, intellectual, emotional and social development should be provided. There should be play out-of-doors as well as indoors and opportunities for active contact with everyday life. For day-care staff as in all work with children the quality of the staff is a decisive factor. To ensure this quality careful selection procedures are necessary in order to employ personnel of good mental and physical health who are in all ways suitable for their work.”

It is intended to investigate and advise regarding the necessity for, and to suggest the type of legislation required, to control present and future child minding. Some of the present institutions undertaking child minding, both by the day and for longer stay, leave a great deal to be desired. However, the efforts of the Education Department inspectors in conjunction with our own pre-school medical and nursing personnel have produced great improvements among many of these places particularly the so called un-affiliated kindergartens, to the extent that a great many of the un-affiliated have raised their standards sufficiently to become affiliated with the Kindergarten Association. It must be emphasised also that this improvement has been obtained by teaching and persuasion and, as far as is known, completely without recourse to legal sanctions. This speaks very highly indeed of the personnel involved.

VITAL STATISTICS

The birth rate and the actual number of births continues to fall. Table 2 shows the trend in the last 3 years as compared with 1955. In fact 1965 had the lowest number of births since 1954.

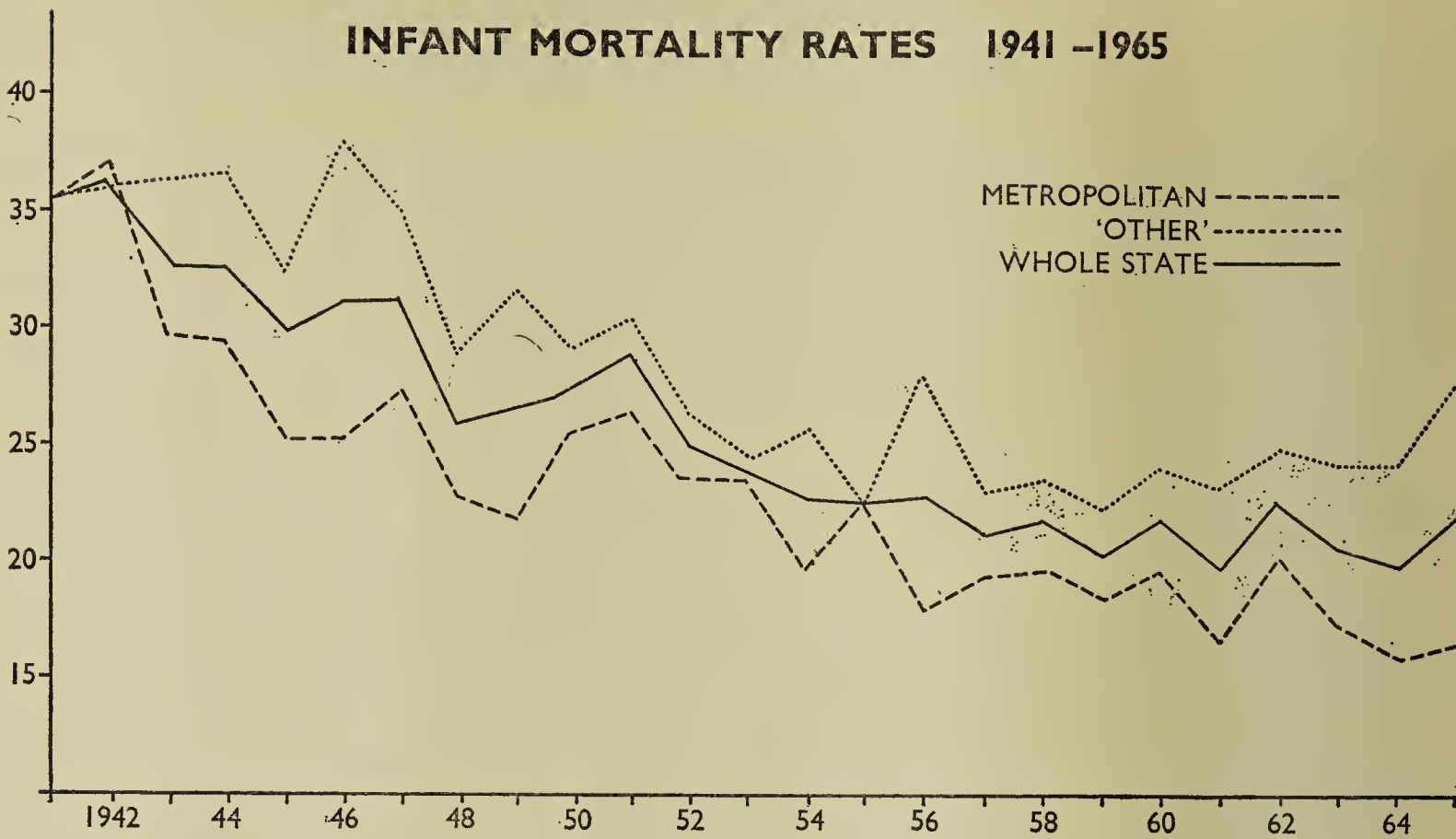
TABLE 2

YEAR			BIRTHS	BIRTH RATE
1955	....	....	16,623	25.08
1963	....	....	17,290	22.36
1964	....	....	16,685	21.11
1965	....	....	16,186	20.08

The record low figure for infant mortality rate, 19.66 in 1964, has not been maintained. The rate for 1965 was 21.69.

A discussion of the overall picture of Western Australia, together with graphical representation of some of the trends was made in the report of 1964, and repetition is not attempted. However, it is necessary to repeat that, as far as *rates* are concerned, annual fluctuations tend to be rather large in small populations.

Figure 1 shows the infant death rates for Western Australia from 1941 to 1965 inclusive.



The rates for the metropolitan statistical area and the other statistical areas are included as well as for the whole State. Ignoring annual fluctuations, it is apparent that, until about 1956, there was a distinct and steady fall in infant mortality. Since that date, however, the overall State figures have not significantly changed, in other words the curve has become flat. This is the state of affairs in the United States of America where concern is being expressed that, after a spectacular fall in the early years of the century, the infant mortality rate is becoming fixed at about 25 deaths per thousand live births per annum.

A closer inspection of the graph in figure 1 suggests that the death rate in children outside the metropolitan area is slightly but definitely rising over the past nine or ten years while that of the metropolitan area is just as definitely falling. This was all dealt with at length in last years' report and it is not intended to repeat it except to say that (a) far too many of the infant deaths in the other statistical areas appear to be due to preventable causes, mainly infections and (b) the discrepancy between city and country deaths rates continue into the pre-school years.

Over the past 10 years or so the death rates in the 1-4 age group in the " other " statistical divisions has been almost double than in the metropolitan area.

The number of deaths in this age group in 1965 shows an improvement (see Table 3.) If this trend persists it will be a major improvement.

TABLE 3
DEATHS 1-4 YEARS

	Metropolitan Statis- tical Division	Other Statistical Division	Whole State
1962	23	44	67
1963	26	58	84
1964	33	47	80
1965	21	35	56

The differential between city and country tends to persist.

It is difficult to be completely certain about the factors causing these differences, but undoubtedly two are of far greater importance than any other. (a) The first is the low population density outside the metro-
politan area, far lower than in any part of Australia, namely 0.38 persons per square mile and (b) the in-
creasing relative numbers of part-native people living on a low socio-economic level in the midst of an
affluent society.

HEALTH OF NATIVE CHILDREN

Concern was expressed in the last report about the effect of environment and social conditions on the health of native children in this State. Some advances were made by this Service in 1965. Installation of an extra full time sister in the Eastern Goldfields, extension of work at Allawah Grove (a native settlement in Guildford,) and financial support for, and control of, an Australian Inland Mission sister in Wyndham and Kununurra area. All sisters working in country districts are being encouraged to improve their relationships with and assistance to natives, particularly those living on reserves.

Within the limits of available staff, further extensions are anticipated in 1966. It is also hoped, in the course of this year, to discover a little more about the morbidity and mortality patterns in native and part-native children.

INDUSTRIAL EXPANSION

It was indicated in the report on the Correspondence Section that the new mining and ore handling areas which have arisen in the last year or so on this State are already providing clients for the Correspondence Service.

It is realised that rapidly expanding townships, particularly in hot areas, represent a potential danger to child health unless the principles and practice of preventive medicine learnt in W.A. during this century are applied during development. It is felt that the majority of the population who are going to these areas have been brought up in reasonably healthy conditions and their socio-economic position is favourable to healthy living. Therefore, the order of priority to achieve this should be :—

- (1) Maintenance of rigid standards of water supply, housing, sewerage disposal, food handling etc. In other words, maintenance of the ordinary public health practices which are applied in developed areas. Particularly strict control of temporary accommodation such as caravan parks, camps etc., will be required to maintain conditions suitable for young children.
- (2) Provision of adequate medical facilities, including easy access to diagnostic and curative services as well as the overall supervision of the environment by public health medical personnel and
- (3) As the concentrations of population increase, the provision of special health services for children—infant, pre-school and school health.

It is pointed out that special infant and child health services are placed third in this priority. However, if the two first items, namely public health and medical services are inadequate, the necessity for special services is probably greater.

STAFF

As mentioned above 7 sisters were recruited, 3 sisters retired, one of these was part time. Four resigned, two due to illness, one to marriage and one returned to hospital work. During the year five sisters were on long service leave, one of them for the second time after over 24 years of service.

Six sisters completed the Pre-School Course. One completed the Technical Course of Teaching Training, the other starter in this Course was one who resigned due to illness. Two completed the first Health Education Course.

Sister Woolcott (who was promoted to Assistant Staff Supervisor) gained the Heinz Scholarship and is to undertake a Tutor's Course in Melbourne in 1966.

R. EDMONDS

SENIOR MEDICAL OFFICER—CHILD HEALTH SERVICES

Appendix VII

School Medical Service

Many country schools are now up to date on a two-year inspection schedule and all have been examined within three years.

A total number of 49,286 children were examined of whom 11,941 were in the country. The parents of 12,664 were notified of some defect or other including dental defects, 4,126 were referred for medical attention. Table II shows a good response by the parents in obtaining this medical attention

A total number of 70,395 children were examined for pediculosis (Table III) and the numbers notified as infected were 350. Re-visits to ensure that effective treatment had been carried out brought the total number of heads inspected up to 115,390.

The general health and nutrition of the children remain good.

Table I
School Medical Service
EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOLS, 1965

—	Number Ex- amined	Number Notified	Number Referred for Medical Atten- tion	Number Referred for Home Atten- tion and Obser- vation	Number Requir- ing Dental Atten- tion	Skin Complaints		Nutrition			Eyes Medical Atten- tion	Tonsils Medical Atten- tion	
						Num- ber	Per cent.	3	Under 3	Over 3			
Metropolitan Schools													
Boys	18,519	5,190	1,488	1,614	2,648	....	....	17,388	344	787	....	....
Girls	18,826	3,525	1,442	1,406	24,50	....	....	17,286	419	1,121	....	....
Total	37,345	8,715	2,930	3,020	5,098	1,474	0·04	34,674	763	1,908	1,572	97
Country Schools													
Boys	6,201	2,118	691	430	1,287	....	....	5,798	127	276	....	....
Girls	5,740	1,831	505	680	1,015	....	....	5,285	140	315	....	....
Total	11,941	3,949	1,196	1,110	2,302	459	0·04	11,083	267	591	544	39
State Total													
Boys	24,720	7,308	2,179	2,044	3,935	....	....	23,186	471	1,063	....	....
Girls	24,566	5,356	1,947	2,085	3,465	....	....	22,571	559	1,436	....	....
Total	49,286	12,664	4,126	4,129	7,400	1,933	0·04	45,757	1,030	2,499	2,116	136

Table II
HOME VISITS BY SCHOOL NURSES, 1965

Total Visits re Medical Attention	Received Attention	Promised Attention	Disinterested	Out or Left District	Visit to Cases Referred for Home Attention	Parents Phoned or Called at Office
3,645	1,702	906	46	775	78	166

Country Areas : 336 visits made

Table III
HYGIENE INSPECTIONS BY NURSES FOR PEDICULOSIS

										No. of Children Examined	Number Notified	Percentage
Metropolitan	....	....	....	....	....	....	....	....	....	60,583	247	.40
Country	....	....	....	....	....	....	....	....	....	9,812	103	1.04
Total	....	....	....	....	....	....	....	....	....	70,395	350	0.49

Including re-visits to above, a total number of 115,390 heads were examined or re-examined.

Appendix VIII

School Dental Services

1965

BY E. J. TURNBULL

We commenced the year with two vacancies in our establishment of fifteen. During the year there were six retirements while five new appointments were made (including two bursar graduates). We therefore had three vacancies at the end of the year.

NORTH WEST

The population is still growing rapidly and arrangements are well in hand to establish another full time Clinic at Wyndham to service the East Kimberleys.

Two itinerant dentists were sent to the North West. One travelled through the Kimberleys, the other through the Pilbarra district and so eased the pressure of work on the Derby and Port Hedland dentists.

The Kimberley itinerant as well as visiting the towns and Missions was able to visit twenty-four station homesteads.

FIGURES FOR THE SCHOOL DENTAL SERVICE

Number of country schools visited	....	....	....	....	....	....	....	....	112
Number of metropolitan schools visited	....	....	....	....	....	....	....	....	13
Number of native missions visited	....	....	....	....	....	....	....	....	16
Number of orphanages visited	....	....	....	....	....	....	....	....	5
Number of children examined	....	....	....	....	....	....	....	....	9,952
Number of children treated	....	....	....	....	....	....	....	....	6,280
Number of children requiring no treatment	....	....	....	....	....	....	....	....	2,958
Number of children who were to receive treatment from private dentists	....	....	....	....	....	....	....	....	201
Number of children whose parents ignored notices	....	....	....	....	....	....	....	....	513

Details of Treatment

Silver amalgam fillings	....	....	....	....	....	....	....	....	....	9,682
Copper amalgam fillings	....	....	....	....	....	....	....	....	....	42
Cement fillings	....	....	....	....	....	....	....	....	....	88
Porcelain fillings	....	....	....	....	....	....	....	....	....	572
Silver nitrate treatments	....	....	....	....	....	....	....	....	....	287
Gold inlays	....	....	....	....	....	....	....	....	....	6
Pulp treatments	....	....	....	....	....	....	....	....	....	6
Prophylaxis	....	....	....	....	....	....	....	....	....	786
Other conservative treatments	....	....	....	....	....	....	....	....	....	1,113
Extractions	....	....	....	....	....	....	....	....	....	6,007
Dentures and orthodontic appliances	....	....	....	....	....	....	....	....	....	20
Consultations with parents	....	....	....	....	....	....	....	....	....	382
Talks and films shown	....	....	....	....	....	....	....	....	....	42

North-West

The following work was done for people apart from children :—

Number of natives attending free of charge	....	....	....	....	....	....	....	742
Fillings for natives free of charge	....	....	....	....	....	....	....	204
Extractions for natives free of charge	..	....	....	....	....	....	....	1,000
Dentures for natives free of charge	....	....	....	....	....	....	....	4
Denture repairs for natives free of charge	....	....	....	....	....	....	....	1
Other treatments for natives free of charge	....	....	....	....	....	....	....	34
Number of white free list patients (pensioners, missionaries, nursing sisters, etc)	....	....	....	....	....	....	....	378
Fillings for white free list patients	....	....	....	....	....	....	....	306
Extractions for white free list patients	....	....	....	....	....	....	....	141
Dentures for white free list patients	....	....	....	....	....	....	....	19
Denture repairs for white free list patients	....	....	....	....	....	....	....	39
Prophylaxis for white free list patients	....	....	....	....	....	....	....	43
Other treatments for white free list patients	....	....	....	....	....	....	....	63
Number of paying patients	....	....	....	....	....	....	....	2,523
Fillings for paying patients	....	....	....	....	....	....	....	1,330
Extractions for paying patients	....	....	....	....	....	....	....	1,629
Dentures for paying patients	....	....	....	....	....	....	....	120
Denture rebases for paying patients	....	....	....	....	....	....	....	10
Denture repairs for paying patients	....	....	....	....	....	....	....	106
Gold inlays for paying patients	....	....	....	....	....	....	....	31
Prophylaxis for paying patients	....	....	....	....	....	....	....	152
Other treatments for paying patients	....	....	....	....	....	....	....	437
Fees debited for paying patients	....	....	....	....	....	....	£6,649 4s. 1d.	

Opportunity was again taken to have the Mobile Clinics of the Perth Dental Hospital treat school children on our behalf at towns visited.

Details of Treatment

Number of children examined	....	....	....	....	....	....	....	4,910
Number of fillings	....	....	....	....	....	....	....	4,448
Number of extractions	....	....	....	....	....	....	....	859
Miscellaneous	....	....	....	....	....	....	....	564

For this service the School Dental Service was debited £11,302 15s. 0d. by the Perth Dental Hospital,

E. J. TURNBULL,
Senior Dental Officer.

Appendix IX

Report of Nursing Section for the Year ended
31st December, 1965

Hospitals Inspected

“ C ” Class	....	....	....	....	....	....	....	158
“ A ” Class	....	....	....	....	....	....	....	25
Midwifery	....	....	....	....	....	....	....	24
Country Hospitals	....	....	....	....	....	....	....	69

Accompanied by the Department’s Health Inspector, numerous inspections were made of properties being considered for conversion to “ C ” Class requirements. These are not included in the above numbers.

New “ C ” Class Hospitals registered 1965

- San Marcelle, East Fremantle—12 beds.
- Agmaroy, Wilson—18 beds.
- Hill Top Lodge, Bentley—19 beds.
- Cromane, Bayswater—40 beds.
- Penn-Rose, Bassendean—30 beds.
- Salvation Army Eventide Home, North Fremantle—11 beds.
- Stranaer, Subiaco—25 beds.
- Collville, Mt. Lawley—17 beds.
- Subiaco Memorial, Subiaco—22 beds.
- Tuohy Memorial, Midland—32 beds.

Scholarships awarded for Post-Graduate study at the College of Nursing, Australia, 1965

- Miss G.H. Mathie—Nursing Administration.
- Miss S. Longmore—Nursing Administration.

Both were very successful in their examinations.

GOVERNMENT SCHOOL OF NURSING

The Organiser of Nurse Training, Miss E. E. Harler, reports:—

(1) Details of General Trainees from Government School of Nursing, 1965—

Hospital				Commenced 1965	Completed Training 1965	Resigned	Terminated
Kalgoorlie	....	....	....	21	22	2	4 (Exams)
Northam	....	....	....	13	8	1	....
Geraldton	....	....	....	19	8	3	2
Total	....	....	....	53	38	6	6

(Number transferred from P.T.S. to Nursing Aide Course—4).

(2) Repatriation General Hospital

Observation by the nurses from each Preliminary Training School, has been undertaken at Repatria-
tion General Hospital for three hours each week. There are four Preliminary Training Schools conducted
each year. The nurses in the second year of training at the District Hospitals Northam and Geraldton
are seconded to the Repatriation General Hospital for extra Theatre experience, of two weeks duration.
Candidates reside during this period at Sir Charles Gairdner Hospital.

(3) *Nursing Aide Training*

The Swan Districts Hospital was registered as a Nursing Aide Training Hospital and the first course commenced on 7th October, 1965.

Hospital				Commenced 1965	Completed Training 1965	Resigned	Terminated
Mt. Henry Home	....	....	....	56	5	6	5
Merredin	....	....	....	4	17	....	1
Busselton	....	....	....	15	12	1	2
Albany	....	....	....	9	15	2	1
Katanning	....	....	....	12	15	....	2
Collie	....	....	....	15	19	....	1
Narrogin	....	....	....	16	11	2	4
Bunbury	....	....	....	19	19	3	4
Swan Districts	....	....	....	6	....	2	....
Total	....	....	....	152	113	16	20

(4) *Refresher Week for Non-Practising Trained Nurses wishing to return to active nursing*

Courses have been conducted by the College of Nursing (Australia) W.A. State Committee at the Government School of Nursing.

Facilities and staff made available by the Minister for Health. These courses were conducted :—

22nd March—26th March, 1965—13 Registered Nurses attended.

13th September—17th September, 1965—19 Registered Nurses Attended.

These sisters apparently are engaged in active nursing since the courses.

P. F. Lee
Principal Matron.

Appendix X

Nurses' Registration Board

Commissioner of Public Health :

I submit herewith a report on the activities of the Nurses' Registration Board for the year ended 31st December, 1965.

The Constitution of the Board—			
Dr. W. S. Davidson	(Chairman)		Commissioner of Public Health— <i>ex officio</i> member.
Dr. A. S. Ellis	....	....	Director of Mental Health Services— <i>ex officio</i> member.
Dr. L. E. LeSouef	....	....	Nominated by the Australian Medical Association—Medical Practitioner.
Dr. R. Natrass	....	....	Nominated by the Australian Medical Association—Practising Obstetrician.
Miss P. F. Lee	....	....	Principal Matron, Public Health — <i>ex officio</i> member.
Mr. J. G. Williams	....	....	Nominated by the Minister for Education—Specialist in General Education.
Miss K. M. Johnson	....	....	Nominated by the Minister for Health—General Nurse.
Miss G. T. Sibert	....	....	Nominated by the Minister for Health—Midwifery and Infant Health Nurse.
Mrs. M. Green	....	....	Nominated by the Minister for Health—Mental Health and General Nurse.
Mr. J. K. Brett	....	....	Nominated by the Minister for Health—Tutor.
Miss O. E. Anstey	....	....	Elected by the Registered General Nurses—General Nurse.
Mr. R. Quinn	....	....	Elected by the Registered Mental Health Nurses—Mental Nurse.
Miss D. Tredrea	....	....	Elected by the Midwifery Nurses—Midwifery Nurse.

Officers—

Miss D. H. Bailey	....	....	Education Officer (Nursing), Public Health Department.
Mrs. P. Lambert	....	....	Assistant Education Officer (Nursing), Public Health Department (commenced 1/2/65).
Mr. R. O. Dee	....	....	Nursing Officer (Education), Public Health Department.
Mr. J. L. Castle	....	....	Secretary.

There were 12 meetings of the Board, 16 meetings of the Education Committee and 8 meetings of the Working Committee.

The meetings of the working committee included :—
4 ordinary meetings
4 group meetings

- 1. Hospital Administrators.
- 2. Medical Superintendents.
- 3. Nursing Educators.
- 4. Student Nurses.

The Curriculum Builders made visits to areas which could provide clinical experience for nurses and held two 3—day seminars.

They presented their First Interim Report to the Board in August, 1965.

Registrations :

The following table sets out the number of initial registrations/enrolments effected during the year (the figures for 1964 in brackets), together with the source of the qualifications of the persons registered.

Division of Register				By Examination in this State		From Outside of W.A.		Total	
General Nurse	....	....	....	333	(342)	309	(313)	642	(655)
Children's Nurse	....	....	....	....	(....)	3	(3)	3	(3)
Mental Health Nurse	....	....	....	22	(19)	4	(8)	26	(27)
Midwifery Nurse	....	....	....	103	(117)	147	(117)	250	(234)
Nursing Aide	....	....	....	213	(167)	26	(31)	239	(198)
Mothercraft Nurse	....	....	....	19	(15)	4	(1)	23	(16)
Dental Nurse	....	....	....	20	(22)	....	(....)	20	(22)
Infant Health Nurse	....	....	....	15	(19)	12	(3)	27	(22)
Total	....	....	....	725	(716)	505	(476)	1,230	(1,192)

Section II of the Nurses' Registration Act—non-payment of re-registration fees. The following table sets out the number of persons whose name has been removed from the several divisions of the register under Section II (1) of the Act and those whose name has been restored to the several divisions of the Register under Section II (3) of the Act, during the twelve months ending 31st December, 1965. (Where a person's name has been removed from more than one division, each has been separately recorded).

Division of Register									Number Removed Section II (1)	Number Restored Section II (3)
General Nurses	....	....	....	....	....	....	....	....	457	325
Infant Health Nurses	....	....	....	....	....	....	....	....	11	18
Children's Nurses	....	....	....	....	....	....	....	....	....	....
Mental Health Nurses	....	....	....	....	....	....	....	....	21	13
Midwifery Nurses	....	....	....	....	....	....	....	....	187	95
Tuberculosis Nurses	....	....	....	....	....	....	....	....	27	4
Mothercraft Nurses	....	....	....	....	....	....	....	....	18	1
Dental Nurses	....	....	....	....	....	....	....	....	....	....
Nursing Aides	....	....	....	....	....	....	....	....	120	16
Total	....	....	....	....	....	....	....	....	841	472

Examinations

The Board conducted 21 sets of examinations, involving 773 candidates and 138 examiners. These included the First Year Examinations as hereunder, in addition to those numbers mentioned above.

Examination									Number of Candidates	
First Year Professional Examination	....	....	....	....	....	....	....	....	495	
First Year Mental Health Examination	....	....	....	....	....	....	....	....	60	

Nursing Aide Training

Approval was being sought for the registration of Swan District Hospital as a Nursing Aide Training School.

First Professional Assessment of General Nursing Students

The Board agreed that a meeting of representatives from the Schools of Nursing be held at least annually for the purpose of general exchange of ideas concerning the First Year Assessment.

Students from Outside Western Australia Continuing Nursing Training in this State

The attention of the Board was drawn to difficulties experienced by "alien" students who transferred to a school of Nursing in this State to continue training and that the adjustment in time allowance should provide opportunities for the students to meet the theoretical requirements of the final examination as well as the clinical practise requirements. It was agreed that the Schools of Nursing be advised of these difficulties.

Student Nurses Conference held in Melbourne—November, 1964.

The recommendations concerning the educational programme for student nurses in Australia, which were submitted to the Board from the Student Nurses Conference were referred to the Curriculum Builders Committee of the Board for consideration.

Interstate Conference of Nursing Registration Boards—1966.

Arrangements were made to hold an interstate meeting in W.A. on Nurse Education on 21–22/3/66. These dates would be immediately before the Royal Australian Nursing Federation Biennial Conference and would coincide with the Technical Training Year in W.A.

T. GIBSON,
A/Secretary, Nurses' Registration Board.

10/2/67.

Appendix XI

ANNUAL REPORT, 1965

Division of Occupational Health

PNEUMOCONIOSIS

In October of 1964, Doctor J. C. McNulty on his return from London was appointed Physician Occupational Health. With him he brought into the Division his interest in pneumoconiosis, especially in miners.

MINING INDUSTRY

Silicosis

During the year 4,314 miners were examined or re-examined, most of them by the Mines Medical Officer. During the year 54 gold miners were newly diagnosed as having evidence of silicosis, (one with associated tuberculosis.)

Five gold miners were found to have active pulmonary tuberculosis without silicosis.

Two thousand three hundred and seventy-six applicants for admission or re-admission to the mining industry were examined.

Asbestosis

There were five new cases.

Fresh cases of asbestosis continue to arise after relatively brief exposure to asbestosis at both the mine and the mill at Wittenoom. Though dust control has been improved in recent years, more needs to be done. There is a need for more satisfactory dust sampling techniques.

The *Pneumoconiosis Medical Board*, (Drs. G. D. B. Edwards, J. C. McNulty and P. J. Maguire) was set up under the Workers' Compensation Act. The Board met twenty-five times (seventeen in Perth and eight in Kalgoorlie); 311 men were examined of whom 248 were found to be suffering from pneumoconiosis.

OTHER DUSTY OCCUPATIONS

Initial pre-employment chest X-ray examinations is recommended for all applicants for work in the dusty trades, and is being practised more and more. In all during the year 211 employees had chest X-Rays.

Silicosis

Two new cases were diagnosed, one in a quarry worker and the other in a factory worker.

The practice of sandblasting in the open is rapidly increasing. Working conditions are uniformly bad. Suitable respiratory protective equipment is not supplied to all employees exposed to silica dust. When it is supplied the quality of the air supplied to sandblasters is often unsuitable for breathing.

Recommendations on working conditions are being prepared for the Chief Inspector of Factories (the Foundry Regulations of the Factories and shops Act contain a Section on Blasting).

Asbestosis

Within the seven years since 1959 eight men in the asbestos industry have been found to be suffering from asbestosis. During this period working conditions have steadily improved; but supervision is still required.

A relatively recent development in the building trade is the spraying of asbestos onto ceilings and walls. Periodical examination of workers, as well as advice on respiratory protection, have been undertaken.

NOISE

The hearing conservation programme in noisy industry is being pursued. That for gold mines is being steadily continued. In addition visits were made to 87 industrial plants, 586 audiograms were taken, and 214 sets of ear plugs fitted.

An experiment was made in the fitting of Silastic plugs, which are moulded to the individuals' external ear. Early deterioration in these has been evident.

The close co-operation of the Commonwealth Acoustic Laboratory, and the support of our Ear, Nose and Throat Consultant, Doctor Dennis Clements, has continued through the year.

In August, at the Australian Medical Association Congress, a paper on Occupational Noise in Western Australia was presented from the Division. The joint authors were Mr. Clive Boundy, Dr. Dennis Clements, Mr. Noel Kenway, and Dr. D. D. Letham.

DERMATITIS

As a result of dermatitis problems 43 factories were visited. The twenty-five notifications to the Department represent only a fraction of the incidence.

Dr. I. C. Anthony, our Consultant, investigated several of the more difficult problems; in August he presented a paper on Occupational Dermatitis to the Australian Medical Association Congress.

PESTICIDES AND FUMIGANTS

Pesticides

Aerial Spraying, Kununurra

A highly toxic organic phosphate pesticide " Bidrin " was applied by air to the cotton-crop at Kununurra. An employee who mixed the concentrate developed symptoms of poisoning. This led to the investigation of all employees, and many were found to have low blood cholinesterase levels.

The Field Officer from this Division visited the area. There was little appreciation by employees or employers of the nature of the hazard involved; working conditions by no means precluded or minimised exposure to " Bidrin ", or other pesticides being used; protective clothing was inadequate.

Through the doctor and the public health laboratory at Wyndham arrangements were made for regular blood cholinesterase checks on all people coming into contact with organic phosphate compounds. Liason was established with the Department of Civil Aviation, which grounded temporarily those pilots with low blood cholinesterase levels.

This Department made recommendations on safe handling of the pesticides and on the use of protective equipment, following which conditions improved. Crop spraying companies are co-operating in obtaining cholinesterase blood levels for pilots before they commence spraying.

Manufactures and formulators of pesticides were visited during the year. When indicated employees were investigated e.g., for urinary arsenic concentration; and atmospheric concentrations of pesticides were assayed.

FUMIGATION

Ships

During the year provisions in the Export Grain Regulations of the Commonwealth Department of Primary Industry resulted in an increase in frequency of fumigation of ships with methyl bromide. The Field Officer inspected all ships after fumigation, issuing a certificate of clearance.

He instructed Grain Inspectors in the ports of Bunbury, Albany, Geraldton and Esperance, and the Health Inspector at Geraldton, in methods of inspection.

Fruit

The State Department of Agriculture has made it compulsory that all bananas entering Western Australia be treated with ethylene di-bromide. The Field Officer formulated safe working conditions which, with the co-operation of the Agriculture Department and the Metropolitan Market Trust are being put into effect.

Market Gardeners

He has continued his check on market gardeners using methyl bromide as a fumigant.

Flour Mills

He checked chambers used for fumigating used sacks and advised on safe procedure.

Regulations

The Department is preparing a draft of regulations which will control the registration of fumigation firms and the licensing of operators.

PROTECTIVE EQUIPMENT

It is not uncommon to find employees using equipment, especially respirator cartridges, unsuitable for protection against the hazardous substance to which they are being exposed. There is for the most part little awareness of the fact that cartridges have a limited effective life. Maintenance and care of respiratory equipment more often than not show lack of care which lowers the effectiveness of the protection offered. The Field Officer is constantly checking and advising on this aspect of the safe handling of pesticides and fumigants.

GASES AND VAPOURS

Carbon Monoxide

Charcoal Iron Industry

For four years the Department has been trying to up grade the standards of safety in this industry. Management when first approached took the attitude that episodes of poisoning were inevitable. Although a " Standard Practice " was laid down in April, 1961, cases of poisoning continued to occur.

A registered nurse has been appointed to the installation. This appointment, together with the introduction of a Carbon Monoxide Breathalyser and an augmented " Standard Practice ", should contribute to an improvement in the standards of safety.

Gasworks

An employee of a gasworks was overcome by carbon monoxide whilst testing condenser pipes for leaks in the open air. Improved techniques for testing have been introduced, and in certain situations air supplied positive pressure breathing apparatus is to be worn.

Other Industries

Several other suspected cases of poisoning were investigated but poisoning was not confirmed.

TRICHLORETHYLENE

Forced exhaust ventilation of a degreasing tank with discharge at roof level resulted in the spread of trichlorethylene through a factory building. Arc welders 200 feet from the tank complained of unpleasant odour, nausea and headache. Investigation revealed that phosgene was being produced in the breathing zone of the welders when an arc was being struck. This was corrected by improved tank design and condensation of trichlorethylene.

COMPRESSED AIR FOR BREATHING

As mentioned under “ Pneumoconioses ”, air supplied to sandblasters is frequently unsuitable for breathing. There have also been complaints about compressed air used for underwater diving. New “ Hookah ” units built by local firms for Government and for private use were inspected. The designs of these differed. The outflow air in these was tested for carbon monoxide, the concentrations of which were found to be within the limits set by the Australian Standards Code Z 26—1965. Oil odour was not detected. Hookah units already in use were not tested. It is evident that poor maintenance of these units when in use could result in a significant increase in the concentrations of both carbon monoxide and of oil.

Apart from major gas suppliers there are a number of smaller firms supplying compressed air as “ re-fills ” for cylinders owned by “ Scuba ” divers. The air supplied did not contain significant amounts of carbon monoxide, but oil and possibly water were present in some samples. These firms are now giving more attention to the adequate filtration of water, oil, and fumes, from the compressed air which they are supplying.

LEAD

Routine urinary lead concentrations on lead workers were continued. There were five employees with significantly elevated figures; and one of these had symptoms of lead poisoning. One was a lead battery breaker, aged 35 years, in a scrap metal yard; after only three months in this occupation he developed symptoms of lead poisoning. With a urinary lead concentration of 0.5 p.p.m. and a haemoglobin concentration of 9.1 G/100 c.c. of blood he was acutely ill; and was treated with calcium di-sodium versenate.

One of the remaining four was a welder of lead sealed water pipes who complained of generalised weakness and muscle and joint pain. Two urinary lead estimations, before admission to hospital for investigation, were 0.78 and 1.7 p.p.m. On admission to hospital a 24 hour specimen of urine obtained under supervision yielded only 0.07 p.p.m. His symptoms subsided, without specific treatment, on removal from lead work. Urinary lead concentrations of other men engaged in this type of welding were within normal range.

The urinary lead concentration of a 17 year old youth working in a battery manufacturing factory in a country municipality was 0.18 p.p.m. He was free of symptoms and signs of poisoning, and was removed from lead work. Though the employer was advised to employ no one under the age of 18 years in lead work, this youth was replaced by one younger than himself. The statutory lower age limit (Factories and Shops Act) is 16 years.

A lead burner with a previous history of lead poisoning, working in a fertiliser plant, had symptoms of lead poisoning, including anaemia, in association with an elevated concentration of urinary lead. (.20 p.p.m.) Removal from lead work, and treatment with calcium di-sodium versenate effected improvement.

VIBRATION DISEASE

A tree feller working under contract, using a petrol driven one man chain saw developed severe disabling Raynaud's disease involving the fingers of both hands. A number of other men similarly employed are reported as having developed dead fingers. An investigation is being planned.

AIR POLLUTION

During the year the Engineer, Air Pollution, has been called in by industry for consultation, and by various complainants, on problems of air pollution.

DUST

Rotary Drier

One complaint from local residents about dust resulted from the emission of dust from a rotary sand and gravel drier. The cause was a faulty cyclone. The Engineer, Air Pollution, advised on the design of a cyclonic scrubber which has proved to be satisfactory.

Cement Works

Complaints have continued about the emission of dust from a cement works, fitted with an aerodynamic dust collector of low efficiency. The company co-operated in the measurement of the emission of dust. This was followed by a specific recommendation to the company to instal a more efficient, electrostatic precipitator, type of dust arresting equipment.

Foundry Cupola

Dust from a small cupola has been the cause of complaint. Details of wet arresters have been obtained from the United Kingdom where they seem to have been effective.

Woodworking

The ordinary cyclone does not appear to have a high enough efficiency to cope with dust from wood working, especially from sanders.

SMOKE

Sawdust fired boilers

The main source of smoke is the sawdust fired boiler, though the general pattern of smoke making varies from one boiler to another. Basic causes of smoke making appear to be hand-feeding and a combustion space which is too small. The latter may be inherent in poor design or arise from a demand for steam in excess of the boiler capacity. Some users of sawdust fuel need to face the necessity for modernisation of boiler plant.

Incinerators

There have been complaints of smoke, soot, ash and char from incinerators. Some of these emissions have been due to incomplete combustion of incinerators content, most often due to poor design. As with sawdust burning there appears to be a need for modernisation of equipment.

SMELL

There have been several complaints of smell during the year. Experiments with masking chemicals are being carried out.

CHIMNEY HEIGHTS

Many companies have made enquiries about chimney heights. In most instances the " Memorandum on chimney heights " of the United Kingdom Ministry of Housing and Local Government has been used as a basis for advice. Outside the range of the memorandum, heights have been calculated from formulae generally accepted.

In late October a public protest against emissions from a brick works was received. The solution here lies in the erection of a chimney of adequate height.

NEW INDUSTRIES

Several large new industries being set up have approached the Department for advice. Their acceptance for the most part of air pollution control augurs well for the future.

SCIENTIFIC ADVISORY COMMITTEE

The Air Pollution Control Council held its first meeting in December and appointed a Scientific Advisory Committee, the Chairman being the Physician in Charge, Occupational Health.

EDUCATION

Members of the staff gave lectures to Fifth Year Medical, Technical School, and St. John's First Aid students, Factory Inspectors, Safety Officers; and also contributed to the Industrial First Aid Course organised by the St. John's Ambulance Association and to a seminar on Industrial First Aid organised by the National Safety Council.

Apart from the contribution to the Australian Medical Association Congress already mentioned, two medical postgraduate lectures were given.

Appendix XII

Report on Technical Information Service and Library

by Dr. J. F. WOOLCOTT

During 1965 two major events affected the functioning of the Technical Information Service and Library. One of these was the move, in August, to new and much more spacious accommodation in the same building. The other was the absence overseas for six months of the year of the head of the unit.

The new accommodation, for the first time in the Library's history, has space and furniture for library users to sit, read and study material. Previously all the library could do was to provide the publications which then had to be taken elsewhere for reading. This facility is so new that it will take time for its full use to develop.

My absence overseas was due to being granted a Public Health Travelling Fellowship from the National Health and Medical Research Council of Australia to study aspects of Technical Information Services and Health Education in ten countries. During this absence, the whole burden of moving the library to its new accommodation fell on Miss McGuire and Miss Theunissen and to them go my, and the Department's very grateful thanks for an immense job very ably done. Many aspects of the Technical Information Service had to be temporarily suspended during this period.

During 1965 the volume of work done by the library continued to increase. Temporary assistance was provided during my absence but the volume of work has increased to the extent where permanent expansion of staff has become an urgent necessity. This increase is occurring both in the "routine" library work and in the information service aspect. These increases are not small e.g., the average monthly journal routing (and the detailed record-keeping, issuing of recall notices etc. associated with it) has almost doubled in the last five years, and has had more than a one-third increase from 1964 to 1965. Many desirable activities, such as adequate supervision of sub-libraries, production of accurate and up-to-date duplicated lists of journals subscribed to, preparation of lists of duplicate and unwanted material for disposal to other libraries, can not be undertaken at all or only at very infrequent intervals. It is also highly desirable that a separate catalogue of the books held in each major sub-library should be available **in that library** and not only, as at present, in the central library.

In the statistics below, the "total journals received", it should be noted, is the number of individual journal titles received. Many of these are duplicated e.g., we take 3 copies of "Lancet", 5 copies of "Nursing Mirror" etc. The total number of such duplicates is 165.

Items	1961	1962	1963	1964	1965
<i>General—</i>					
Non-journal publications received	778	999	856	727	753
Additional journals received	24	32	24	54	39
Total journal titles received	393	425	449	503	542
Average monthly journal routing	616	667	674	850	1145
<i>Borrowing (excludes routine journals)—</i>					
From all other libraries	420	308	474	340	437
From W.A. Libraries	380	268	429	280	407
From Medical Library of W.A.	295	193	310	179	232
From Libraries outside W.A.	40	40	45	60	30
<i>Lending (excludes routine journals)—</i>					
All external loans	259	194	289	339	720
To Medical Library of W.A.	77	56	41	42	117
Number of organisations to whom loans made	21	24	24	24	43
<i>Photocopies supplied</i>	1,238	1,368	1,662	2,965	1,127

With the exception of photocopies supplied all these figures show substantial increases. Routing of journals (the figure includes both regular and special) jumped from 10,202 (monthly average 850) in 1964 to 13,736 (monthly average 1145) in 1965, an increase of 34.6%. With almost 550 separate journals coming into the library the increase is explained only in part. It is not simply that more journals are coming in but that quite clearly considerably more usage is being made of journals as a whole.

Borrowings show the same pattern of increased flow of material, from 340 in 1964 to 437 in 1965 an increase of 28.5%. This increased borrowing was spread mainly across 3 other libraries in W.A., the Medical Library, the State Library and the University Library. There was a drop of 50% in borrowings made outside the state.

Conversely, loans made outside the state jumped from 22 in 1964 to 67 in 1965, loans to other W.A. libraries more than doubled from 317 in 1964 to 653 in 1965. The spread of organisations inside W.A. to whom P.H.D. Library material was loaned increased considerably from 20 to 29. These include Commonwealth and State Government Departments, local authorities, large private firms, hospitals, etc., etc. Borrowers of more than 20 items over the year were, in order, the Medical Library (117), Perth Dental Hospital (88), Government Chemical Laboratories (69), Repatriation General Hospital, Hollywood (64), Mental Health Services (59), Department of Agriculture (36), Fremantle Hospital (34), University of W.A. (28), School of Occupational Therapy (28), Royal Perth Hospital Library (23). The two heaviest borrowers outside the State were South Australian Government Offices Central Library with 27 items and Repatriation General Hospital, Heidelberg, with 22 items. Tasmania was the only State from which no requests for materials were received.

In addition to the figures given above, a total of 24 journals were regularly borrowed from other libraries for routine circulation to personnel of the Department, mostly to one or two individuals only so that P.H.D. subscription to these was not warranted. Also 147 of our journals were routinely circulated to organisations and individuals outside the Department. Examples are: Perth City Council (56), Mental Health Services (19), Government Chemical Laboratories (18), Medical Library (15), Education Department (10), Gairdner Hospital (10), Department of Agriculture (7), Bunbury Town Council (6), National Safety Council (5), etc. etc. These journals, too, are usually seen by only one or two individuals within these organisations so that subscription to the particular journals concerned would be unjustified on their part when the materials can be borrowed from P.H.D. Library.

In general, it is apparent that the Library is playing a more and more substantial role within the community as a purveyor, both inside and outside the Department, of published information across the broad field of modern public health. The steady increase, year by year, in routine library work proves this point unmistakably.

In addition to "pure" library work, however, the unit functions as a Technical Information Service. It is very difficult to give statistics on this aspect of the work since no clear-cut distinction has been drawn between requests for specified detailed references, texts, etc., and requests for information about a particular topic. This latter type of request is becoming more and more frequent, however, and is one which may require for an answer merely a few minutes or up to several hours of careful searching using not only all available library tools—indexes, abstracts, catalogues, reference books etc., etc.—but drawing on a wide personal knowledge and experience of the technical literature in that particular field. In addition, of course, the Technical Information Service purposefully directs specific items of information about certain topics as it comes to hand to individuals or units known to have an interest in that subject. Efforts are being made to develop a method of measuring the amount of work involved in this part of the unit's functioning.

It is a continuing pleasure to acknowledge with thanks the close friendly co-operation and assistance received from many other libraries in Western Australia and outside this state. Material for permanent retention was received during the year from surplus disposal and library exchange services. To those organisations to whom we are indebted in this way go our warmest thanks.

Appendix XIII

State X-ray Laboratory

ANNUAL REPORT FOR 1965

To the Commissioner of Public Health :

Introduction

The State X-ray Laboratory consists of a Medical Physics and an Engineering Division. This report is concerned with the Medical Physics Division, which is responsible to the Radiological Advisory Council for the administration of the Radioactive Substances Act and for the provision of Radiation Protection and Medical Physics Services.

1. RADIOACTIVE SUBSTANCES ACT

In 1965 the Radiological Advisory Council established minimum standards of equipment for registration of X-ray apparatus. Separate standards were adopted for (1) Medical Practitioners Installations (2) Dental Installations.

Registration of an installation will not be approved by the Council unless it complies with the standards. Where inspection reveals non-compliance, the owner is advised of the deficiencies and informed that registration cannot be completed until the deficiencies are remedied.

The following are details of licences and registrations for 1965 :—

Licences current at 31/12/65	....	....	....	....	149
New licence applications received	....	....	....	....	16
New licences granted—					
(a) Medical	....	....	....	....	4
(b) Non Medical	....	....	....	....	7
Licences cancelled	....	....	....	....	1
Registrations approved—					
(a) Medical	....	....	....	....	9
(b) Dental	....	....	....	....	73
Registration applications up to 31/12/65—					
(a) Medical	....	....	....	....	132
(b) Dental	....	....	....	....	42

Meetings were held during 1965 as follows :—

Radiological Advisory Council	....	....	....	....	4
Medical Advisory Sub-Committee	....	....	....	....	5
Dental Advisory Sub-Committee	....	....	....	....	1
Industrial Advisory Sub-Committee	...	....	....	....	....

The Laboratory provides the technical services necessary for the administration of the Act. These are referred to in other parts of this report.

LABORATORY SERVICES

(a) Film Badge Monitoring Service

The Radioactive Substances Act regulations require that all persons exposed to radiation must wear film badges. The film badge service conducted by the State X-ray Laboratory was established in 1957 and is used by the majority of radiation workers in the State.

In 1965, 8,966 personnel monitoring films were processed and the doses evaluated. The number of persons monitored at 31st December was 770, an increase of 27% over the figure for 1964. This number was made up as follows :—

Medical, Hospital	....	....	....	....	....	....	187
Medical, Radiologists and Miscellaneous				....	....	....	90
Medical, General Practitioners			....	....	....	....	56
Chiropractors	....	....	....	....	....	....	6
Dental	....	....	....	....	....	....	364
Non-Medical	....	....	....	....	....	....	67

Cumulative dose records are maintained for all persons regularly exposed to radiation

(b) *Inspection Services*

There is a continuing program of inspection of installations of new applicants for licences and registration and of re-inspection of those already licenced and registered. This program was accelerated in 1965.

Number of inspections, 1965—

Dental	....	....	....	....	....	....	....	....	116
Medical Practitioners	....	....	....	....	....	....	....	....	52
Veterinarians	....	....	....	....	....	....	....	....	2
Hospital	....	....	....	....	....	....	....	....	9
Industrial and other non-medical	....	....	....	....	....	....	....	....	15

Some installations are visited more than once, either for follow up purposes or to provide technical advice. Technical advice is also given by telephone or to visitors at the Laboratory.

(c) *Radiation Protection Services*

The Laboratory provides a design service for radiation protection. This applies to X-ray installations and to the use of radioactive substances. In addition, frequent requests for advice on radiation hazards, design of protective equipment, were dealt with during the year.

(d) *Radiation Standards*

The Laboratory's sub-standard X-ray dosimeter is used for the calibration of radiation measuring equipment and for the calibration of superficial therapy X-ray equipment. Seven of the latter calibrations were carried out during 1965.

In September, the sub-standard dosimeter was calibrated against the Australian primary standard of X-ray measurement at the Commonwealth X-ray and Radium Laboratory.

The Laboratory's calibrated radioactive sources are used for the calibration of (1) equipment used for measurement of radioactivity and (2) survey equipment and monitoring films. Two dose monitors were calibrated for other organisations in 1965.

(e) *Measurement of Radioactivity*

Installation and testing of equipment for the measurement of low levels of radioactivity continued during 1965.

(f) *Staff*

The staff of the Physics Division consists of the Officer-in-charge, two physicists, a technician and a part time inspector. Physicist L. M. Davies was granted twelve months study leave during 1965 and is at present studying Health Physics at the University of Surrey. A temporary replacement for this Officer is being sought.

(g) *General*

Lectures—

1. Seminar of the Society of X-ray Technology and the Australian Institute of Radiography: "History of Radiation Protection"
2. With the introduction of radioactive substances into the Leaving Syllabus in 1965, lectures and demonstrations on Radiation Protection for two groups of science teachers were held at the State X-ray Laboratory. Subsequently a meeting of the Science Teachers Association was addressed on the same subject.

Training

1. *Radiographers*

1. Laboratory staff are now responsible for the teaching of Radiographic Equipment I, one of the subjects in the three years course of training for diagnostic radiographers.

2. *Nurses*

A series of three lectures on Radioactive Substances and protection were given to final year trainee nurses at the Sir Charles Gairdner Hospital.

Civil Defence

Laboratory staff continue to assist the Civil Defence Organisation by lecturing on Radiological Aspects of Civil Defence and advising the organisation on specific questions concerned with monitoring and radiation protection.

B. E. KING,

Physicist in Charge, Physics Division State X-ray Laboratory

Maternal Mortality Studies
in
Western Australia 1961-1965

A Comprehensive Review



FIGURE No. 1

MATERNAL MORTALITY IN WESTERN AUSTRALIA
IN 5-YEAR PLATEAUX
1931-1965

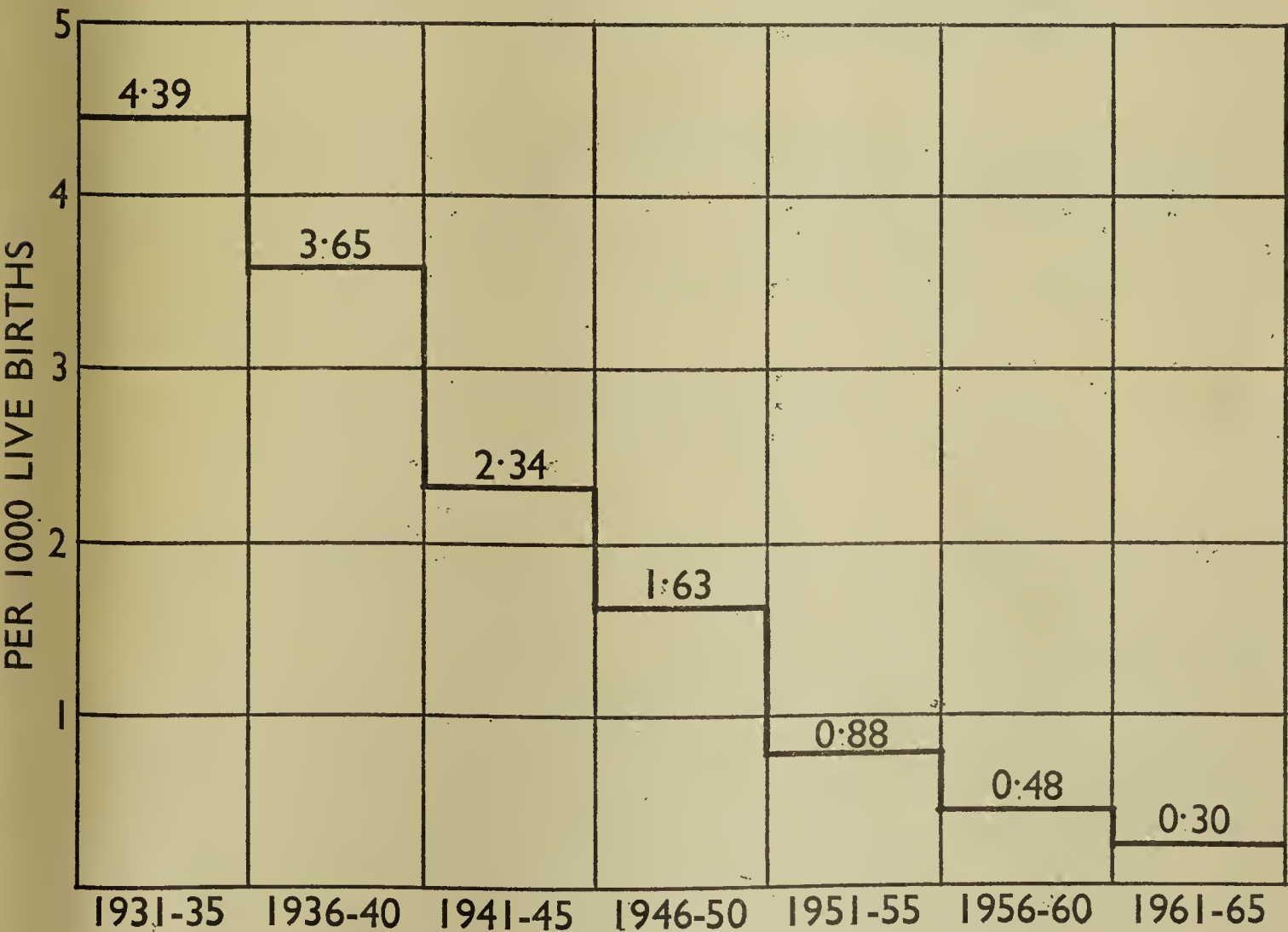


Table No. 1
MATERNAL MORTALITY IN WESTERN AUSTRALIA,
1956-1965

Year	Live Births	Maternal Deaths	Rate per 1,000 Live Births	Rate for Australia
1956	16,916	9	0.53	0.56
1957	16,924	11	0.65	0.63
1958	16,731	8	0.48	0.50
1959	17,111	5	0.29	0.46
1960	16,926	8	0.47	0.53
1961	17,066	7	0.41	0.45
1962	17,036	5	0.29	0.36
1963	17,278	4	0.23	0.27
1964	16,685	6	0.36	0.33
1965	16,186	3	0.19	0.33

Table No. 2
SUMMARY OF CAUSES OF MATERNAL DEATH INVESTIGATED DURING THE YEARS
1961-1965

International List No.	Causes of Death	Number of Cases
Obstetric Causes		
644	Rupture of Uterus	1
645-0	Ruptured Ectopic Pregnancy	1
650-1	Abortion, Therapeutic (with Rupture of Uterus)	1
650-2	Abortion, Induced (with Air Embolism)	2
651-2	Abortion, Septic (Tetanus, Pseudomonas, Welchii)	3
651-3	Abortion, Septic (with Sudden Death ? Pulmonary Embolism)	1
670	Placenta Praevia	1
671	Retained Placenta (P.P.H.)	1
671	Manual Removal of Placenta (Anaesthetic Death)	2
674	Difficult Breech Delivery (Anaesthetic Death)	1
676	Repair of Lacerated Perineum (Anaesthetic Death)	1
677	Rupture of Uterus	1
678	Amniotic Fluid Embolism	2
681	Puerperal Sepsis	3
684	Puerperal Pulmonary Embolism	1
685	Puerperal Eclampsia	2
Total		24
Non-Obstetric Causes		
443.9	Chronic Myocardial Degeneration	1
045.0	Bacillary Dysentery	1
492.9	Acute Interstitial Pneumonitis	1
Total		3
Grand Total		27

AVERAGE MATERNAL MORTALITY RATE
1961-1965
0.295 per 1,000 Live Births

Detailed records as to the Causes of Maternal Mortality in Western Australia are available from 1897 onwards. The maternal death rate in Australia remained at the generally prevailing high level of between four and five per 1,000 live births until 1935 when, in common with most other countries, a progressive improvement of the figures began, and during the course of three decades, the maternal mortality rate was reduced to less than one-tenth of the former figure. (See Fig. 1).

In 1960 it was decided to elaborate the former procedure of enquiring into the circumstances surrounding maternal deaths in Western Australia. Members of the Maternal and Child Health Committee of the State Health Council were impressed with the success of the methods used by the Maternal Mortality Committee of the Committee on Maternal Health of the Minnesota State Medical Association, which during the ten-year period 1950-1959 had achieved remarkable results in their approach to the problem of maternal deaths (McKelvey and Freeman, 1954; Barno, Freeman and Bellville, 1957; Barno, Freeman and Baken, 1962). As a result of this, legislation was introduced in Western Australia whereby a Maternal Mortality Committee was established and given the responsibility of conducting a detailed investigation into every maternal death occurring in the State.

This was achieved by an amendment to the Health Act which came into force in October, 1960. Briefly, the provisions of Part XIII A of the Health Act of Western Australia now require :—

- (a) the immediate reporting of every maternal death in Western Australia to the Commissioner of Health
- (b) the appointment of an investigator, who is a specialist in Obstetrics, to undertake a detailed investigation of every such maternal death
- (c) the establishment of a Maternal Mortality Committee consisting of three permanent members and two provisional members (selected from a panel of six, according to the circumstances of the case)
- (d) that after due consideration (with the addition of specially co-opted medical practitioners or nurses if necessary) the committee shall determine whether the death under review might have been avoided
- (e) that the determination of the Committee shall include such constructive comments as may be of value for the future assistance and guidance of medical practitioners and nurses
- (f) that the decision of the Committee shall be notified in writing to the practitioner concerned by the Chairman of the Committee, together with any constructive comments that may be of future assistance or guidance
- (g) that none of the information or records considered by the Committee shall be admissible in any court or action, or shall be divulged in whole or in part by any person connected with the enquiry, except as provided for by the Act (always providing that there shall be no prejudice to any of the provisions of the Coroner's Act in relation to indictable offences, etc.).
- (h) that for teaching and educational purposes the information and knowledge accumulated by the Committee may be imparted from time to time to medical practitioners, medical students, nurses and trainee nurses, for their assistance and guidance in avoiding and preventing maternal morbidity and mortality (provided, of course, that every reasonable step shall be taken to preclude disclosure or identification of the individuals concerned in the case reports).

There are four important features about the above provisions :—

1. The investigation is in the hands of a trained investigator, a specialist in obstetrics, who personally conducts an on-the-spot investigation of every maternal death occurring in the State and submits a confidential report to the chairman. The report is entirely confidential to the chairman and the Committee members and contains no particulars from which it might be possible to ascertain the identity of the woman or the place where death occurred, other than whether it took place in a metropolitan or a rural area.
2. The composition of the Committee can be varied by co-option, if necessary, to meet the circumstances of the individual case.
3. The conditions governing the investigation afford complete anonymity to any individual concerned, provided of course, that there is no prejudice to any of the provisions of the Coroner's Act.
4. The paramount aim of the Committee is to acquire knowledge which, when imparted to medical practitioners, students and nurses, will assist in preventing or reducing the risk to the life and health of mothers.

Table No. 1 shows the Maternal Death Rates in Western Australia and in Australia as a whole for the year 1956 to 1965. During the last five years of this period the Maternal Mortality Committee investigated 27 deaths, three of which were from non-obstetric causes. Two of these deaths were excluded from the Maternal Mortality Tables (a death from Bacillary Dysentery and a death from Acute Interstitial Pneumonitis), but the patient dying from Chronic Myocardial Degeneration was regarded as a maternal death. Details of the causes of death during this five year period from 1961 to 1965 are summarised in Table No. 2.

A glance at Table No. 2 shows that the obstetrical causes of death may be considered under seven main headings in their order of frequency :—

1. Abortion	....	....	....	....	....	....	7 cases
2. Anaesthesia	....	....	....	....	....	....	4 cases
3. Haemorrhage	....	....	....	....	....	....	4 cases
4. Puerperal Sepsis	....	....	....	....	....	....	3 cases
5. Embolism	....	....	....	....	....	....	3 cases
6. Eclampsia	....	....	....	....	....	....	2 cases
7. Rupture of Uterus	....	....	....	....	....	....	1 case

1. Abortion

There was one case of therapeutic abortion carried out for a psychiatric indication at the 13th week of pregnancy. Trauma to the cervix extending up into the lower uterine segment resulted in bleeding, from which death occurred despite an attempt at hysterectomy.

In another case, an attempt at self-induced abortion resulted in sudden death from air embolism.

In a third case, a mildly septic abortion, in a patient with an incompetent cervix into which a suture had been inserted without success, apparently produced a typical pulmonary embolism with sudden death on the eighth day. Autopsy, however, failed to yield confirmation of this, though no other alternative cause was found—so the Committee was forced to list this as a death from unknown cause.

In the fourth case the patient died from air embolism and shock during the performance of a criminal abortion.

In the three remaining cases the abortion was frankly septic, probably following illegal induction in each case. In one instance, the infecting organism was *pseudomonas pyocyanea* and death resulted from complicating suppurative leptomeningitis. In the next case, the patient was admitted with frank tetanus, from which she died on the 16th day after the abortion. Uterine cultures only yielded *Clostridium Welchii*, although the clinical condition was undoubtedly tetanus. The last case was an overwhelming infection with *Clostridium Welchii*, and the patient was in a condition of bacteraemic shock when she was sent up to the hospital, and in fact died before she could be taken to the ward.

All of these seven cases were classed as avoidable deaths. All the deaths from abortion have been deliberately placed together, because if these were to be divided into three from sepsis, three from embolism, and one from haemorrhage, it would only mask the fact that over 25 per cent of our maternal deaths in this State are due to Abortion—more than half of them illegal and all of them with avoidable factors.

2. *Anaesthesia*

Complications relating to the administration of anaesthesia were responsible for no fewer than four deaths, almost one-sixth of all deaths investigated.

In two instances death was associated with manual removal of the placenta. In one case death was due to cardiac and respiratory failure, whilst under open ether anaesthesia. No premedication was given and the doctor was working single-handed in an isolated area with inadequate apparatus. In the other case somewhat similar conditions prevailed; no premedication was given and open chloroform was administered, followed by ether.

In the third case a third degree laceration of the perineum occurred and the patient succumbed from respiratory failure after induction with pentothal anaesthesia and before the repair could be started.

In the fourth case the patient died from respiratory failure during a difficult delivery under chloroform anaesthesia administered in conditions of isolation.

These four deaths must be regarded as avoidable, and in part due to factors such as failure to give premedication, lack of adequate facilities and absence of skilled anaesthetic assistance—or indeed of any medical assistance whatsoever in three of the cases.

3. *Haemorrhage*

There were four cases where haemorrhage was the main cause of death (apart from the case of therapeutic abortion with traumatic rupture of the uterus already mentioned, and another case of ruptured uterus due to the action of pitocin).

In one of these a recently married young woman of 19 was admitted to a small country hospital on account of transient episodes of lower abdominal pain with a provisional diagnosis of appendicitis. At operation, the patient was found to have a ruptured tubal pregnancy with massive intradominal bleeding. No blood was available for transfusion and the use of plasma was insufficient to prevent death. This death was classed as avoidable.

The second case was one of placenta praevia. At about the 18th week of her fourth pregnancy she started to have repeated blood loss, and a cervical suture was inserted in the belief that the cervix was incompetent. Bleeding recurred however and placenta praevia was suspected. The patient was admitted to hospital at the 25th week and continued to bleed intermittently up to the 33rd week. Vaginal examination was deferred too long and when it was carried out preparation for an immediate Caesarean Section had not been made. After some delay Caesarean Section was performed and, in spite of the fact that matched blood had been prepared for this patient, she died from excessive blood loss and under-transfusion. This was an avoidable death.

The third case was in a gravida III at term who entered a small rural hospital suffering from concealed and revealed accidental haemorrhage of some 250 mls., and had a tense and tender uterus. The baby was stillborn and blood loss continued after the placenta was delivered, reaching an estimated total of about 800mls. The uterus failed to respond to ergometrine and pitocin. Intravenous fluids and eventually blood were given but the bleeding continued and, in spite of bimanual compression and uterine packing, the patient died. The total estimated blood loss was 3,000mls. Post-mortem examination revealed a right-sided rupture of the uterus with haematoma formation in the broad ligament. It was decided that death was due to accidental antepartum haemorrhage associated with spontaneous intrapartum rupture of the uterus, and that this was an unavoidable death.

The fourth case was a multigravida who never sought any medical care and who was found dead in bed following a post-partum haemorrhage due to a retained placenta.

4. *Puerperal Sepsis*

This heading included two cases of bacteraemic shock and one case of severe general peritonitis.

The first case of bacteraemic shock was in a patient whose pregnancy was illegitimate and who probably introduced the infection herself by rupturing her membranes with a knitting needle. On admission, she was draining offensive liquor and had a temperature of 102°F. and a pulse of 120. Shortly after delivery, there was a leucocytosis of 45,000 and the patient became hypotensive, developed a pulse rate of 140 and a temperature of 105°F. and died 60 hours after delivery.

In the second case the patient, a schizophrenic aboriginal girl, also with an illegitimate pregnancy, who never reported for antenatal care, developed a rapid pulse rate, hypotension and jaundice with some enlargement of the liver, and abdominal distension shortly after she gave birth to a stillborn macerated foetus. She was gravely ill, and died 48 hours after delivery. Blood culture revealed *Escheria Coli* and *Aerobacter Aerogenes*, and the organisms were also present in the urine.

In both of these instances it was concluded that there was patient responsibility for the outcome, for the two deaths were unavoidable by the time the patients came under adequate medical care.

The third case was a primigravida aged 22 with a dubious history of rupture of the membranes at the 37th week. Ten days later she was admitted to hospital with a clear vaginal discharge and a high vaginal swab showed a scanty growth of *Staph. pyogenes* and *Strep. faecalis*, for which antibiotics were prescribed. She then developed a concealed accidental haemorrhage and the foetal heart disappeared. She became increasingly ill with a rising pulse and a temperature of 37.8°C., and at full dilatation was delivered by forceps of a macerated child. Following delivery of the placenta, with a considerable amount of blood clot, the patient collapsed and did not recover consciousness. Death took place about ten hours after delivery. Post-mortem examination showed that death was caused by general peritonitis due to *Strep. faecalis* infection, with concealed accidental haemorrhage as a complicating factor. In this case, it was felt that an earlier recognition of the significance of the premature rupture of the membranes and earlier institution of the correct form of antibiotic therapy might have favourably influenced the outcome, though it was impossible to decide to what extent the concealed accidental haemorrhage prejudiced the situation.

5. *Embolism*

There were two cases of amniotic embolism and one case of pulmonary embolism.

The first case diagnosed as amniotic embolism was four weeks over term, and labour was induced by pitocin. She had a rapid delivery of a living child one hour and 45 minutes later. A little over an hour later she suddenly developed pain, restlessness, dyspnoea and signs of shock. The blood failed to clot and, in spite of fibrinogen injections, she died in coma less than five hours after delivery. This was thought almost certainly to be a case of amniotic fluid embolism. Unfortunately, no specimen of lung tissue was available for histological examination.

The second case of amniotic embolism was proven histologically. This patient was a 37 year old gravida eight who received satisfactory antenatal care from the eighth week of pregnancy onward. She came into labour a week after term and delivery of a child weighing nine pounds 12 ounces was completed in less than five hours. In spite of intravenous ergometrine given at the time of delivery of the anterior shoulder, the patient continued to bleed during the third stage of labour, both before and after the delivery of the placenta. It was also noted that the blood was not clotting. The patient's condition deteriorated rapidly, with restlessness, cyanosis and shock, and in spite of transfusions of fibrinogen, serum, saline and blood, followed by internal cardiac massage, the patient died a little more than two hours after delivery.

Amniotic fluid embolism with associated hypofibrinogenaemia was suspected on clinical grounds, and post-mortem examination confirmed that this was the cause of death by yielding evidence of amniotic debris in the vessels of the lung. This and the previous death were both unavoidable.

The case of Pulmonary Embolism was a multipara who had an apparently normal puerperium, but developed a mild phlebitis of the left leg on the tenth day. Three days later she died from a pulmonary embolism, which was confirmed at autopsy. This was classified as an unavoidable death.

There were three other cases of embolism, two of which were air embolism (described under the heading of abortion) and the other was a pulmonary embolism occurring in a case of eclampsia (see following paragraph).

6. *Eclampsia*

There were two cases of post-partum eclampsia. One case was an example of a patient who developed mild symptoms of toxæmia prior to delivery. Following delivery, she developed atypical convulsions and died 18 hours later. Post-mortem examination of the liver showed changes typical of eclampsia.

The other case is of interest, as it illustrates the possible part which the use of ergometrine may play in the precipitation of eclamptic convulsions in hypertensive patients, or in patients with a previous history of toxæmia or hypertension during pregnancy. (T.W. Baillie, 1963). In this patient a very mild toxæmia of pregnancy was noted and appropriately treated. Two days before delivery the blood-pressure rose to 140/90 mm. Hg., and there was slight vaginal bleeding. The patient was therefore admitted to hospital and surgical induction of labour was carried out on the day before term. Delivery was normal, and 0.5 mg. of ergometrine was given intramuscularly when the head crowned, and a further dose of 0.5 mg. after delivery of the placenta seven minutes later. The blood pressure was 150/110 mm. Hg., immediately after delivery: an hour later it had risen to 170/110 and to 190/120 within the next half hour. Heavy sedation was given, but five hours later the patient had an eclamptic convulsion and the blood-pressure was 210/110 mm. Hg. In spite of intensive treatment with phenergan, largactil and pethidine, the patient went on to have 23 eclamptic convulsions within the first 24 hours after delivery. After some improvement she collapsed on the fourth day after delivery with manifestations suggestive of pulmonary embolism and died in coma on the 13th day after delivery. Post-mortem examination showed evidence of recent cellular disturbance in the liver and a pulmonary embolism. Death was classified as due to Puerperal Eclampsia associated with Pulmonary Embolism, and was regarded as unavoidable, with the reservation that in future ergometrine should be regarded as contra-indicated in such cases, and that if oxytocic drugs were necessary pitocin only should be used.

7. *Rupture of the Uterus due to Oxytocin administration*

There was one death from this cause. The patient had a history of eight previous full-term pregnancies. Labour was induced at term by medical means and following the administration of castor oil and an enema an intra-nasal spray of oxytocin was used at 15 minute intervals. The uterus went into tonic contraction and underwent a complete rupture, the foetus being expelled into the abdominal cavity with massive intraperitoneal haemorrhage, from which the patient died undelivered. This was classified as an avoidable death and provided yet another warning on the need for the greatest caution in the use of oxytocin for the induction of labour.

8. *Non-Obstetric Deaths*

There were three non-obstetric deaths. One of these was due to chronic hypertensive cardio-vascular disease. The patient was a very obese gravida nine, aged 37. She did not report for ante-natal care until the 28th week. In her eighth pregnancy two years previously she suffered a coronary occlusion during the second stage of labour, which was confirmed by electro-cardiogram. Following this, she was advised to undergo sterilisation on medical grounds, but refused this and discharged herself against advice. During her ninth pregnancy she received hypotensive therapy but refused to come into hospital for treatment and frequently did not keep her ante-natal appointments. When she came into labour her blood-pressure was 200/130 mm. Hg. She was delivered spontaneously of a child weighing 7,320 gms. (16lb. 2oz.). Two days later she had a single episode of anginal pain, but insisted on discharging herself on the seventh day and again refused to consider sterilisation. On the 30th day after delivery she was found dead on the floor at home by one of her children.

Post-mortem examination showed a grossly enlarged heart, weighing 780 grams, with minute coronary arteries. The cause of death was given as chronic myocardial degeneration resulting from essential hypertension. This death was classified as unavoidable but if it had not been for the continued refusal of the patient to accept or act on medical advice the association of a further pregnancy with the death could at least have been avoided.

Of the other two non-obstetric deaths, one was due to Bacillary Dysentery. This patient was an aboriginal woman who developed dysenteric symptoms five days before admission to hospital at the 35th week of pregnancy. She delivered the baby prematurely but the dysentery worsened and she died on the tenth day of the puerperium.

The third non-obstetric death was due to a particularly virulent respiratory infection in a patient near term, which caused death from acute interstitial pneumonitis in less than 72 hours.

The Avoidable Factor

Studies in maternal mortality in recent years have shown that up to fifty per cent, or even more, of all maternal deaths can be regarded as avoidable. This does not mean to say that in every one of these cases death could actually have been prevented, but rather that in each case there was at least one major factor for which the patient, the doctor, the nurse, the laboratory, or some other body was primarily responsible, which could have been avoided and which might have altered the fatal outcome of the case. The avoidable factor might have occurred during the antenatal period, or during labour or the puerperium. In some cases there might have been contributory factors during the antenatal period or during labour leading to a major avoidable factor. A failure to determine the haemoglobin level or the blood-group, or an omission to test for albumin during the antenatal period, for example, could be a contributory factor to a later disaster.

In the 27 cases which were investigated during the years 1961–1965 there were avoidable factors in 16, that is, in 59 per cent of the cases. In six cases the responsibility rested with the patient and in the remaining ten cases the responsibility was with the physician. In each case it was the duty of the Committee carefully to weigh all the evidence and to determine the cause of death and to give an impartial decision as to the responsibility for the train of events leading up to the ultimate fatality. It was then the duty of the Chairman to write to the practitioner concerned and pass on to him the decision of the Committee, and to include such constructive comments as might be indicated, with a view to the avoidance of similar pitfalls in the future. In many cases it was, of course, only too easy to be wise after the event, but the detailed study of each case history provided many important lessons which could only serve as a challenge to the future for the elimination of factors due to human error.

Two other associated factors might be noted at this point. One is the fact that in seven out of the 27 cases of this series the pregnancy was illegitimate. The other relates to race, and it is perhaps of interest that the figures include three patients who were full-blooded aborigines and two part aborigines—groups in whom higher morbidity figures are well known to exist.

THE EDUCATIONAL VALUE OF THE ENQUIRIES

When the Maternal Mortality Committee was established in 1960, one of the functions which was stressed was the educational value of the investigations. It was envisaged that this would apply, not only to those who were directly concerned with the occurrence of a maternal death but would also be of value in the post-graduate training of medical practitioners, as well as in the instruction of medical students, nurses and trainee nurses, for their guidance in avoiding and preventing maternal morbidity and mortality. It is unnecessary to state that, when case histories are used for teaching purposes, all reasonable steps are taken to prevent disclosure or identification of the individuals concerned in the report.

The educational value of these enquiries has been amply demonstrated during the five years that have passed since the Committee was established. Numerous opportunities have been taken of passing on the lessons to be learned from the case reports to both graduate and under-graduate audiences. Furthermore, five brochures have been prepared for circulation to members of the medical profession in Western Australia on particular problems arising out of the case studies. The Editor of the A.M.A. Bulletin of Western Australia has been most co-operative in allowing them to be published and distributed with the Monthly Bulletin.

Brochures have been prepared for the following five subjects :—

1. Notes on Puerperal and Post-abortion Infections.
2. Ergometrine and Hypertension.
3. Notes on Anaesthesia in Obstetrics.
4. The value of Auto-transfusion in the Emergency Treatment of Ruptured Ectopic Pregnancy.
5. A Plea for Caution in the Use of Oxytocin.

1. *Puerperal and Post-abortion Infections*

This brochure was stimulated by the occurrence of two deaths from fulminating sepsis where the patients presented in a condition of bacteraemic shock. The importance of jaundice (however transient), hypotension, and oliguria in the diagnosis of this condition was stressed, particularly in the case of *Clostridium Welchii* infections. In Western Australia, post-abortion infections have been found to be due in the main to *Clostridium Welchii* (49%), *Staphylococcus Pyogenes* (38%), Anaerobic *Staphylococcus* (11%) and Haemolytic *Streptococcus* (2%).

A practical discussion on the bacteriology and chemotherapy of the infections completed the brochure.

2. *Ergometrine and Hypotension*

Ergometrine possesses both oxytocic and vasoconstrictive properties, and it has become apparent that in some patients, particularly those who have suffered from hypertension, or have been prone to develop some degree of pre-eclampsic toxæmia, the routine administration of ergometrine as the anterior shoulder is being delivered may precipitate an episode of hypertension or even of eclampsia. In both of the deaths mentioned under the heading of eclampsia it was thought that ergometrine was the precipitating factor, and this was the subject of the second brochure, which was originally written after the occurrence of the first case. The second case provided even more definite evidence of the risk of giving ergometrine to such patients and of the advisability of restricting the use of oxytocic drugs to pitocin only, in the case on necessity.

3. *Anaesthesia in Obstetrics*

In view of the fact that four out of the first thirteen deaths investigated were directly attributable to anaesthesia, the subject of the third brochure was "Anaesthesia in Obstetrics". In this brochure, written by a consultant in anaesthesia, the various dangers of anaesthesia in obstetrics were discussed, and a special plea was made for the use of local or regional methods wherever possible (such as local infiltration of the perineum and vulva, pudendal block and saddle block) in preference to general anaesthesia.

4. *Ectopic Pregnancy as a cause of Maternal Mortality*

In view of the fact that one of the deaths in our series was from excessive blood loss in a case of ectopic pregnancy, a short brochure has been prepared on the value of auto-transfusion in such cases, particularly in isolated country hospitals where emergency supplies of cross-matched blood are difficult to obtain. Only as recently as July, 1965, there was a leading article in the "Lancet" on Ectopic Pregnancy as a Cause of Maternal Mortality. The article points out that there are 20 or 30 deaths each year from this condition in the United Kingdom and that there is no evidence that this number is falling. The article also draws attention to the fact that none of the first three Confidential Reports on Maternal Deaths in England and Wales have drawn attention to extra-uterine pregnancy as a cause of maternal mortality and no analysis or examination of possible avoidable factors in this condition has been made. The present day frequency of ectopic pregnancy is variously given as between one in 260 to one in 300 cases of pregnancy, with a mortality rate of less than one per cent, but with the steady decline in the overall figures of maternal mortality this is perhaps another cause which will come to the fore as the years go by. The principal cause of death in extra-uterine pregnancy is, of course, haemorrhage, and it is here that the use of auto-transfusion (which is sometimes spurned in these days of ready availability of donor blood) can be a life-saving measure, particularly in a small isolated hospital. In the patient with a massive abdominal haemorrhage following the rupture of an ectopic pregnancy a relatively large supply of blood of the right group is immediately available, and if a few simple preparations are made beforehand the blood can readily be collected and transfused back to the patient's circulation as the operation proceeds.

5. *A Plea for Caution in the use of Oxytocin*

This brochure was stimulated by the death of a patient from uterine rupture brought about by the use of an intra-nasal spray of oxytocin, which is regarded by many as an innocuous procedure, though at least one other death has been reported (Green, 1965). Oxytocin has been given by the intramuscular, trans-buccal, intranasal and intravenous routes, but it is generally agreed that the latter method is the safest. Certain contra-indications to the use of oxytocin, such as grand multiparity, disproportion, malpresentation, previous Caesarean Section and hypersensitivity are discussed. Details of administration by the intravenous drip method are given and stress is laid upon the meticulous care which is necessary and the importance of constant observation of the patient.

In concluding this report on the activities of the Maternal Mortality Committee during the first five years of its operation, I think that the thanks of the Committee should be extended to the practitioners obstetricians, physicians, pathologists and others whose co-operation has been sought, and in particular to the investigator, whose painstaking and detailed analysis of the case histories has been of inestimable value.

GORDON KING,
Chairman, Maternal Mortality Committee.

REFERENCES

- Barno, A., Freeman, D. W. and Bellville, T. P. (1957), *Obst. Gyn.*, N.Y., 9 : 336.
Barno, A., Freeman, D. W. and Baken, M. P. (1962), *Minnesota Med.*, 45 : 947.
Baillie, T. W. (1963), *Brit. Med. J.*, 1 : 585.
Green, G. H. (1965), *New Zeal. Med. J.*, 64 : 79.
Lancet (1965), 2 : 223.
McKelvey, J. L. and Freeman, D. W. (1954), *Am. J. Obst. Gyn.*, 68 : 29.

Report of the Activities of the General and Meat Inspection Branch for 1965

GENERAL SANITATION REPORT

The already slender resources of the General Inspection Branch were again stretched to capacity during the year 1965. However, a realisation that staff increases were most necessary to meet the increasing responsibilities thrust upon the Department by the ever expanding requirements of this State, had now become apparent, and initial steps were being taken to provide for the necessary staff relief.

In the interim, the General Inspection Staff continued to provide the highest possible output which the existing circumstances permitted.

The rapid growth of activities throughout the North West of the State, considerably aggravated the precariously unstable work programme, and finally resulted in the appointment of a full time Health Inspector to the Pilbara District. Mr. C. Dixon, who was previously employed by the Fremantle City Council filled the position and established his Headquarters at Port Hedland.

Some difficulty was experienced in maintaining a continuity of satisfactory Health Inspection Service in the West Kimberley Districts, until Mr. A. Gilmore was re-appointed to the position, after he had been employed on other duties.

American interests at North West Cape, Exmouth Gulf, and the subsequent huge undertaking in construction and establishing a communications centre in this area, resulted in an influx of a large floating population, which ultimately required direct health supervision and resulted in the appointment of Mr. V. Buchanan, previously of the South Perth City Council, to look after inspection interests in Exmouth.

The activities of the branch during 1965 were much the same as for the previous year, and covered the following items—

1. Rubbish collection and disposal.
2. Inspections of sub-divisions of land intended for housing purposes.
3. Royal Show activities.
4. Fly control.
5. Mosquito control
6. Pest control.
7. Routine inspections—including country towns, complaints, appeals to Commissioner of Public Health, approval of septic tank plans and food and water sampling.
8. Experimental projects.
9. Meat Inspection.

Relevant figures and details concerning each of the above items, are submitted hereunder.

1. RUBBISH DISPOSAL

METROPOLITAN REFUSE DISPOSAL PLANNING COMMITTEE

Summary of Activities for 1965

During 1965, the Committee continued to further its aims and objects, and the year was noted for the successful completion of a number of projects in planning and application, implemented during the preceding year.

A total of 23 meetings of the Control Planning Committee and the associated Zone Committees, were held and at the Planning Committee's last meeting for 1965, satisfaction was expressed at the continuing efforts of the Zone Committees, and the results being obtained.

Progress may be summarised as follows :—

- (a) Completion of organisation within zones for controlled methods of cleaning septic tanks and disposal systems ; and controlled methods of liquid waste disposal at organised sites.
Scales of fees established, and approved contractors appointed. Planning now proceeding for establishing of combined disposal sites.
- (b) Standard of land fill sites being continuously improved : Complaints rarely received and during 1965 were directed towards one site only.
Two new sites were established to replace two sites closed when reclamation was completed.
- (c) Co-ordinated planning between the Planning Committee, Department of Industrial Development and a private enterprise for the collection and disposal of derelict car bodies, was completed : Disposal site was established and compaction plant installed. Car bodies now being collected and processed at rate of 40 per day.
Rate of production of car bodies still exceeds collection rate, and further planning is being directed towards improved methods of collection and reduction of stock piles at land fill sites.
- (d) Co-ordinated planning with Australian paper manufactures in waste paper salvage completed: All metropolitan area now provided with service : Collection averaging 120 tons weekly.

- (e) Extension of use of compactor type refuse collection vehicles completed in 1965 : Twelve vehicles of this type now in use in zone districts : Ten more ordered for use in 1966.
- (f) Litter survey of metropolitan area completed and report distributed to Zones. Health Education programme on litter being planned for 1966, conjointly with Health Education Council.

2. SUB-DIVISION OF LAND

The year's activities were as follows :—

<i>Proposals for Sub-Divisions</i>												
Metropolitan	....	....	....	....	....	....	....	....	....	....	....	445
Country	....	....	....	....	....	....	....	....	....	....	....	32
State Housing Commission	....	....	....	....	....	....	....	....	....	....	....	31
Area Surveys	....	....	....	....	....	....	....	....	....	....	....	19
Appeals	....	....	....	....	....	....	....	....	....	....	....	11
Taxation Department	....	....	....	....	....	....	....	....	....	....	....	27
Industrial Development Department	....	....	....	....	....	....	....	....	....	....	....	5
Public Works Department	....	....	....	....	....	....	....	....	....	....	....	3
General Enquiries, Local Authorities Land Agents etc.	....	....	....	....	....	....	....	....	....	....	....	301
Total	....	....	....	....	....	....	....	....	....	....	....	874

Area surveys during this year included proposals for provision of local deep sewerage schemes at local authority level or private proposers.

3. ROYAL SHOW

Departmental activities at the Royal Show resulted in further improvements in the many fields where vigilance by Health Inspectors is most necessary.

It is pleasing to note that steady improvement in the general conduct of Health affairs at the Show, is becoming more apparent each year.

It must be noted and acknowledged that the general co-operative spirit of most of the commercial enterprises represented at the Show and the interest and support of the Royal Agriculture Society and its officers, is largely responsible for this pleasing state of affairs.

4. FLY CONTROL

The continued co-operation and support of numerous local authorities assured a successful year with regards to providing an effective fly control campaign in the metropolitan area, and one contry town (Northam).

In all, 37,355 premises were visited during the campaign, with fly breeding being located in 3,757 of these premises.

Sixteen local authorities participated and employed 40 university students from four to eight weeks. Details of the campaign are appended to this report as Appendix "A".

5. MOSQUITO CONTROL

Mosquito control measures were continued throughout the year. Special attention being given to river breeding sites and septic tanks.

Close liaison was maintained with the Swan River Conservation Board, Town Planning Department and local authorities.

6. PEST CONTROL

Details relating to the functioning of this section during 1965 are as follows :—

- (a) The testing of new insecticides for fly larvae control in battery caged poultry yards, and in septic tanks for mosquito larvae control, received attention.
- (b) Snail specimens were regularly collected for research purposes, for the Department of Parasitology, Sydney University.
- (c) A campaign to eradicate rats from Pigeon Island in the Abrolhos Group was initiated and successfully completed.
- (d) Research into the incidence of fly breeding at skin drying sheds was commenced and resulted in the collection and identification of numerous types of flies.
- (e) Two hundred and forty inspections of abattoirs and government institutions for fly breeding were carried out during the year.
- (f) One hundred and four inspections were made for fly breeding at Subiaco and Swanbourne Sewerage Treatment Works.

Relevant figures are as follows :—

Item	Animal Control			Insect Control								Other	
	Rodent	Cat	Possum	Fly	Cock-roach	Bee	Ter-mite	Silver Fish	Ant	Flea	Mosquito	Pigeon Mite	Red Back Spider
Number of Cases	217	27	9	91	159	7	54	5	11	7	13	7	1

Total 608

7. ROUTINE INSPECTIONS

Included are the undermentioned various items :—

- (a) *Septic Tank Plans*;—A total of 9,268 septic tank applications were approved for the year 1965 (some after several amendments).

Separate systems totalled 1,342 which represented 14.48 per cent of the total number, and combined systems totalled 7,926 which represented 85.52 per cent of the total number.

Inspection of six pint flushing systems—(One hundred and seventy-nine six pint cisterns examined three hundred and eighty-six pint pedestal pans examined.)

- (b) *Inspection of Imported and Frozen Fish, Fremantle Wharf*.—A total of 1,785.9 tons were examined and passed for human consumption.

- (c) *Food and Water Sampling*.—Samples procured during the year totalled 1,293. These comprised :—

Food	....	....	....	....	....	....	....	100
Miscellaneous	....	....	....	....	....	....	....	13
Reservoirs	....	....	....	....	....	....	....	82
Swimming Pools	....	....	....	....	....	....	....	553
Water sampling at Ocean Beaches	....	....	....	....	....	....	....	545
Total	....	....	....	....	....	....	....	1,293

- (d) *General Inspections*.—Towns : 44, includes hospitals and special inspections.

8. EXPERIMENTAL PROJECTS

Activities in this field continued from 1964. The following items received attention :—

- (a) Inspection of aerodromes.
 (b) Various methods of providing for satisfactory disposal for liquid wastes.
 (c) Experimental septic tank systems.
 (d) Proposed legislation to govern the marketing of wet fish.

Following a cursory departmental survey of the marketing of wet fish, a committee to deal with this subject was formed in September, 1965. The committee comprised representatives of the Public Health Department, Fisheries and Fauna Department and local authorities. It was established to assist in improving the methods of handling, transporting, storing and marketing of wet fish in Western Australia.

- (e) Liaison with the following iron ore groups operating in the North Western Areas was established with regards to control of overall health affairs in these areas :—

Mt. Goldsworthy Mining Associates.—

Mt. Goldsworthy and Finucane Island.

Hamersley Iron Pty. Ltd. and Central Engineering Services Ltd.—

Mt. Tom Price and Dampier.

Mt. Newman Iron Ore Co.—

Mt. Newman.

Cliffs of W.A.—

Cleveland Cliffs (Mt. Enid).

Dampier Mining Co. Ltd. (B.H.P.).—

Deepdale.

Exmouth Gulf.—

Various contractors.

Investigations and remedial action was taken during an outbreak of bowel disorders in this area in July, 1965.

9. MEAT INSPECTION

Mr. C. Virgo, Senior Meat Inspector-in-Charge at the Midland Junction Abattoirs has mainly been responsible for maintaining a satisfactory service with regards to meat inspection for the State authorities.

At times, he has experienced difficulty in maintaining adequate staff to cope with inspection requirements, as accidents, leave commitments and illnesses have, at times, severely reduced the number of qualified officers which constitute the meat inspection staff.

A review of the working conditions of the meat inspection staffs at all abattoirs, will need to be undertaken in the near future.

Meat inspection figures for 1965 are appended to this report as Appendix "B".

To conclude, it is my desire to express appreciation for the co-operation, assistance and understanding which I have received during the year from the professional and administrative officers of this department. The day to day problems would have appeared to be far more difficult without this support.

My sincere thanks are also due to the officers of the general and meat inspection and pest control staffs of the department for their generous and undivided loyalty and support during the year 1965.

A. A. PILBEAM,
 Chief Inspector.

METROPOLITAN FLY CAMPAIGN, 1965/66

Summary of Results

	Number of Students Employed	Time of Employment (in weeks)	Number of Premises Visited	Number of Premises where Breeding Detected	Number of Breeding Places Found	Rubbish Bins	Buried Food Wastes	Poultry Keeping	Incinerators	Mulch	Compost Heaps	Blood and Bone	Animal Manure	Fowl Manure	Lawn Clippings	Others	
Shire of Armadale/Kelmscott...	1	12	1,255	125	141	42	10	24	3	6	4	...	6	4	38	4	141
Shire of Bayswater	3	16	1,808	237	237	90	16	10	2	8	6	...	15	16	74	...	237
Shire of Bassendean	1	8	1,586	86	88	44	10	...	2	4	6	...	...	...	21	...	88
Shire of Belmont	4	48	5,704	689	696	306	71	60	10	31	25	...	33	19	140	...	696
Town of Claremont	3	12	2,014	110	126	23	7	12	...	...	6	...	13	1	64	...	126
Shire of Cockburn	1	6	600	70	70	49	9	2	...	1	...	...	...	1	8	...	70
Town of Cottesloe	4	16	2,347	228	228	81	15	5	1	19	20	...	9	6	72	...	228
City of Fremantle	4	44	5,636	390	391	215	38	33	10	30	14	...	13	16	22	...	391
Town of Midland	1	4	651	24	24	11	1	9	...	...	1	...	...	...	2	...	24
Town of Melville	1	2 days	...	See No re	sepa- turns	rate avail	report able	...	...	...	...	...	...	...	...	...	...
Shire of Mundaring	3	12	1,555	146	151	36	16	2	...	9	17	...	5	...	66	...	151
City of Nedlands	1	4	451	29	29	5	...	...	...	6	14	...	3	1	...	...	29
Shire of Peppermint Grove	3	26	3,748	208	208	113	20	20	2	9	8	...	5	12	19	...	208
City of Perth	5	43	4,998	443	449	141	77	20	14	25	23	...	34	31	78	5	449
Shire of Perth	2	14	1,126	146	174	51	18	44	4	4	...	...	...	11	12	30	174
Shire of Swan Guildford	3	24	3,801	584	719	234	45	86	22	20	18	...	23	62	208	...	719
City of South Perth	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	40	289 and 2 days	37,280	3,515	3,731	1,441	353	327	70	172	162	4	159	180	824	39	3,731

METROPOLITAN FLY CAMPAIGN 1964/65
UNIVERSITY STUDENTS—EMPLOYMENT AS FLY CONTROL OFFICERS

Metropolitan :—

Sixteen Metropolitan Local Authorities requested 40 students to act as Fly Control Officers.
In 1963/64 20 Local Authorities requested 53 students
In 1964/65 18 Local Authorities requested 40 students.

Country :—

One Country Local Authority requested four students to act as Fly Control Officers.
In 1963/64 two Country Local Authorities requested seven students.
In 1964/65 one Country Local Authority requested two students.

STUDENTS—APPLICATIONS, TRAINING AND ALLOTMENT

Three classes for training students were conducted on the following dates :—

17th and 18th November, 1965—10 students
22nd and 23rd November, 1965—6 students
1st and 2nd December, 1965—9 students

In conjunction with the training of twenty five University Students, four Inspectors attended the course held 22nd and 23rd November 1965.

30 previously trained students re-applied.
26 previously trained students were allotted to Local Authorities
31 new applications were received.
25 new students were trained.
18 newly trained students were allotted to Local Authorities.

During the period of employment of students by Local Authorities, three (3) trained students withdrew, one (1) trained student was employed as a replacement and two (2) newly trained students who had completed their period of employment with the Local Authorities to whom they were allotted, were re-employed as replacements.

A total of forty-five (45) students were employed.

METROPOLITAN LOCAL AUTHORITIES NOT EMPLOYING STUDENTS

Ten Local Authorities listed below, did not employ University Students :—

Canning

Students employed previously, but one extra full time Inspector employed. Council consider Inspectors can adequately impart fly control measures.

East Fremantle

Council consider that due to small area involved, their Inspector can adequately impart fly control measures.

Gosnells

Students employed during previous campaigns, but none were employed during the 1965/66 campaign as they are considered unsatisfactory.

Kalamunda

Students have never been employed. An extra full time Inspector has now been appointed.

Kwinana

Students employed during early campaigns, but not since the appointment of an extra full time Inspector in February, 1964.

Mellville

University students employed during early campaigns but for the 1964/65 campaign, three full time Health Inspector students were employed. An extra full time Inspector has been appointed and one full Health Inspector student is now employed.

Mosman Park

Students employed in early campaigns, but Council now consider their Inspector can adequately impart fly control measures.

Rockingham

Students employed in early campaigns, but since the appointment of an extra full time Inspector in April, 1964, Council consider Inspectors can adequately impart fly control measures.

Subiaco

Students previously employed, but since the appointment of an extra full time Inspector in June, 1965, Council consider Inspectors can adequately impart fly control measures.

Wanneroo

Students have never been employed. Council consider their Inspector can adequately impart fly control measures.

METROPOLITAN FLY CONTROL PLANNING COMMITTEE
31st March, 1966.

REPORT OF FLY CONTROL OFFICERS

Metropolitan Area

Local Authorities participating	....	....	....	16
Fly Control Officers employed	....	....	....	40
Premises inspected	....	....	....	37,280
Premises breeding flies	....	....	....	3,515

MAIN BREEDING SITES

Rubbish Bins	....	....	....	....	38.6%
Rubbish Pits	....	....	....	....	9.5%
Poultry Pens	....	....	....	....	8.8%
Incinerators	....	....	....	....	1.9%
Garden Beds	....	....	....	....	4.6%
Lawn Clipping Heaps	....	....	....	....	22.1%
Manure Heaps	....	....	....	....	9.1%
Compost Heaps	....	....	....	....	4.3%
Others	....	....	....	....	1.1%

COMPARATIVE FIGURES OF BREEDING FOR LAST FIVE (5) YEARS

1961/62	....	22.3%
1962/63	....	23.5%
1963/64	....	10.0%
1964/65	....	10.0%
1965/66	....	9.4%

DISPOSAL OF POTENTIAL FLY BREEDING MATERIAL

Liaison is maintained with the Co-ordinating officer of the Metropolitan Refuse Disposal Planning Committee.

FLY CAMPAIGN 1965/66
Comparison with 1964/65

Local Authority	Number of Premises Visited		Number of Houses Breeding Flies		Percentage of Houses Breeding Flies	
	1964/65	1965/66	1964/65	1965/66	1964/65	1965/66
<i>Metropolitan—</i>						
Shire of Armadale/Kelmscott	1,116	1,255	127	125	11.4	9.9
Shire of Bayswater	2,391	1,808	473	237	19.8	13.1
Shire of Bassendean	1,547	1,586	168	86	10.8	5.4
Shire of Belmont	3,338	5,704	283	689	8.5	12.0
Shire of Canning	2,198	....	214	....	9.7	....
Town of Claremont	....	2,014	....	110	....	5.4
Shire of Cockburn	940	600	158	70	16.8	11.6
Town of Cottesloe	2,323	2,347	156	228	6.7	9.7
City of Fremantle	5,670	5,636	424	390	7.4	6.9
Shire of Gosnells	946	....	70	....	7.4	....
Town of Midland	455	651	42	24	9.2	3.6
Shire of Mundaring	545	....	44	....	8.0	....
City of Nedlands	1,435	1,555	196	146	13.7	9.3
Shire of Peppermint Grove	412	451	43	29	10.4	6.4
City of Perth	3,595	3,748	196	208	5.4	5.5
Shire of Perth	4,853	4,998	357	443	7.3	8.8
Shire of Swan Guildford	1,140	1,126	164	146	14.4	12.9
City of South Perth	3,254	3,801	594	584	18.2	15.3
City of Subiaco	1,197	....	48	....	4.0	....
Total	37,355	37,280	3,757	3,515	10.0%	9.4%
<i>Country—</i>						
Town of Northam	1,704	1,920	64	199	3.7	10.4%

PARTICULARS OF BREEDING SITES
Comparison with 1964/65 and 1965/66

Metropolitan

					1964/65	1965/66
					%	%
Rubbish bins	....	....	....	....	30.1	38.6
Rubbish pits	....	....	....	....	11.7	9.5
Poultry pens	....	....	....	....	10.9	8.8
Incinerators	....	....	....	....	3.2	1.9
Garden beds	....	....	....	....	6.7	4.6
Lawn clipping heaps	....	....	....	....	19.4	22.1
Manure heaps	....	....	....	....	12.5	9.1
Compost heaps	....	....	....	....	4.6	4.3
Others	....	....	....	....	....	1.1

Appendix XVI

Public Buildings Section Report for 1965

During the past twelve months there has been a steady flow of work done by this section. Three hundred and forty-seven plans of public buildings were approved involving work to the value of £5,069,570.

This section deals with the plan examination and approval of documents in connection with the following :—

- (a) Public Buildings (Part VI of the Health Act) such as hospitals, town halls, civic centres, public halls, concert rooms, assembly halls, schools, churches, chapels, and meeting houses and includes tents, galleries, grandstands, enclosures or platforms used for public gatherings.
- (b) Private hospitals.
- (c) Health Act (Swimming Pools) Regulations.

It is the function of this section to ensure that the following is observed in the construction and fitting-up of a public building.

1. The building must be structurally adequate.
2. (a) Assessing the numbers of persons to be accommodated.
(b) The exit and stairs must be sufficient in number and width.
(c) The dispersal of exits, the correct swing of doors, quick release fastenings and exit notices provided according to regulations.
(d) Seating and aisle arrangements are provided to regulations.
4. Fire-isolation is provided according to the requirements of the Fire-isolation Regulations.
5. Check the type of lining material to be used as some materials are prohibited for use in public buildings, owing to their lack of fire retardent qualities, rapid surface flame spread and the production of thick smoke when ignited.
6. Check the adequacy of fire-fighting appliances.
7. The provision of adequate ventilation.
8. The provision of sufficient lighting, natural and artificial.
9. Check the sufficiency of the toilet accommodation and the general sanitation of the building.
10. Where biograph boxes are provided to ensure compliance with the regulations.
11. Ensure the "C" class hospital construction and appurtenance comply with the Private Hospital Regulations.
12. That public swimming pools are constructed and supplied with proper water treatment plant to meet the requirements of Health Act (Swimming Pools) Regulations. Carry out tests on completion of works.
13. The section is responsible for the safety and arrangement of electrical installations in public buildings. For this purpose two Electrical Supervisors from the Architectural Division of the Public Works Department are attached to this section.

Where necessary the assistance of the following are obtained :—

1. The Structural Design Section—A.D. Public Works Department on structural stability.
2. The Mechanical Services—A.D. Public Works Department on mechanical ventilation of public buildings.
3. The Country Towns Sewerage Branch of the Engineering Division, Public Works Department on technical matters concerning filtration and chlorinating systems of proposed public swimming pools.

This section carries out all inspections of public buildings under construction or where alterations and additions are being made within a 50 mile radius of Perth and in special cases inspections are made beyond these limits.

Public Building structures of the Royal Agricultural Showgrounds at Claremont are also inspected annually by this section.

R. T. DUNSTAN,
Senior Inspector, Public Buildings Section.

Appendix XVII

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner, and King Edward Memorial Hospitals

ALL PATIENTS DISCHARGED, 1965, IN AGE GROUPS

Age Groups					Number of Cases		Per cent. of Total	Total Days Stay in Hospital		Per cent. of Grand Total	Average No. of Days in Hospital	
					Male	Female		Male	Female		Male	Female
00-14	....	....	....	....	6,079	4,354	26·83	40,673	29,573	14·15	6·69	6·79
15-19	....	....	....	....	1,147	1,792	7·56	10,789	14,130	5·02	9·41	7·89
20-29	....	....	....	....	1,759	4,163	15·23	29,354	34,821	12·93	16·69	8·36
30-39	....	....	....	....	1,367	2,435	9·78	18,286	23,298	8·38	13·38	9·57
40-49	....	....	....	....	1,490	1,671	8·13	21,758	20,981	8·61	14·60	12·56
50-59	....	....	....	....	1,702	1,605	8·50	29,863	26,878	11·43	17·55	16·75
60-69	....	....	....	....	2,230	2,769	12·86	47,288	54,782	20·57	21·21	19·78
70 and over	....	....	....	....	2,161	21,60	11·11	43,504	50,340	18·91	20·13	23·31
Total	....	....	....	....	17,935	20,949	100·00	241,515	254,803	100·00	13·5	12·2
Total Male and Female					38,884			496,318			12·76	

Daily Bed Average : 1,359·8

OPERATION CASES IN AGE GROUPS, 1965

Age Groups					Number of Cases		Per cent. of Total	Total Days Stay in Hospital		Per cent. of Grand Total	Average No. of Days in Hospital	
					Male	Female		Male	Female		Male	Female
00-14	....	....	....	....	3,037	1,655	12·07	23,051	11,153	6·54	7·59	6·74
15-19	....	....	....	....	696	640	3·44	7,403	5,340	2·44	10·64	8·34
20-29	....	....	....	....	985	1,326	5·94	21,680	12,868	6·60	22·01	9·70
30-39	....	....	....	....	763	1,038	4·63	11,311	10,048	4·08	14·82	9·68
40-49	....	....	....	....	756	948	4·38	11,298	12,041	4·46	14·94	12·70
50-59	....	....	....	....	870	839	4·40	16,262	14,421	5·86	18·69	17·19
60-69	....	....	....	....	960	952	4·91	22,362	18,401	7·79	23·29	19·33
70 and over	....	....	....	....	928	1,155	5·36	19,745	28,267	9·17	21·28	24·47
Total	....	....	....	....	8,995	8,553	45·13	133,112	112,539	46·94	14·80	13·16
Total Male and Female					17,548			245,651			14·00	

Daily Bed Average : 672.56

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals

PATIENTS DISCHARGED DURING 1965

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		Results*					
			Male	Female	Male	Female		Male	Female	Sex	1	2	3	4	5		
1	Tuberculosis—All Forms	001-019	85	58	10,256	5,528	3·18	120·7	95·3	49	43	M.	....	75	5	1	4
2	Syphilis, Gonorrhoea and other Venereal Diseases	020-039	17	22	379	239	0·12	22·3	10·9	41	34	F.	2	49	6	....	1
3	Other Infectious Diseases	040-138	413	380	3,606	3,408	1·41	8·7	9·0	14	18	M.	3	10	3	....	1
4	Malignant Neoplasms, including those of Lymphatic and Haematopoietic Systems	140-205	975	886	20,352	17,242	7·57	20·9	19·5	61	61	F.	5	13	4	....	6
5	Benign and Unspecified Neoplasms	210-239	171	323	1,646	2,859	·91	9·6	8·9	37	39	F.	47	352	7	1	3
6	Allergic Disorders	240-245	276	418	2,109	3,719	1·17	7·6	8·9	26	35	M.	52	315	8	2	212
7	Diseases of Thyroid Gland	250-254	10	61	197	973	·24	19·7	16·0	48	45	F.	59	399	292	13	135
8	Diabetes Mellitus	260	75	153	1,412	2,865	·86	18·8	18·7	49	56	M.	66	450	216	19	2
9	Diseases of other Endocrine Glands	270-277	25	33	464	417	·18	18·6	12·6	39	36	F.	104	129	12	6	1
10	Avitaminoses and other Metabolic Diseases	280-289	50	52	1,079	1,376	·49	21·6	26·5	47	46	M.	186	12	9	9	3
11	Diseases of Blood Forming Organs and Blood	290-299	133	185	1,562	2,438	·81	11·7	13·2	29	56	F.	263	13	18	2	5
12	Mental Psychoneurotic and Personality Disorders	300-326	518	737	7,116	12,567	3·97	13·7	17·1	42	45	M.	394	36	5	....	1
13	Vascular Lesions Affecting Central Nervous System	330-334	250	325	8,229	8,035	3·28	32·9	24·7	65	58	F.	11	31	17	....	1
14	Inflammatory and other Diseases of Central Nervous System	340-357	307	272	5,191	3,893	1·83	16·9	14·3	33	34	M.	3	60	60	2	10
15	Diseases of Nervous and Peripheral Ganglia	360-369	72	86	1,125	1,512	·53	15·6	17·6	46	52	F.	123	302	47	2	8
16	Diseases of the eye....	370-389	508	477	4,971	4,507	1·91	9·8	9·4	35	44	M.	10	543	195	2	10
17	Diseases of Ear and Mastoid Process	390-398	295	285	2,232	1,888	·83	7·6	6·6	18	27	F.	7	127	29	1	86
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400-416	82	90	1,684	1,888	·72	20·5	21·0	24	32	M.	6	148	90	1	80
19	Diseases of the Heart and Arteries Including Hypertension and Arteriosclerosis	420-456	911	737	18,062	15,312	6·72	19·8	20·8	62	67	F.	14	188	84	3	18
													11	160	95	1	5
													6	49	17	....	....
													8	66	11	....	1
													69	371	66	1	1
													71	361	38	4	3
													14	268	6	6	1
													24	245	14	2	....
													2	59	18	2	8
													2	61	17	2	2
													24	630	84	5	166
													18	514	75	2	128

20	Diseases of Veins and other Diseases of Circulatory System	460-468	243	357	3,376	4,660	1·62	13·9	13·1	48	47	M.	59	161	10	2	11
21	Diseases of Respiratory System ...	470-527	2,307	1,725	18,580	12,864	6·34	8·1	7·5	24	23	F.	73	255	21	2	6
22	Diseases of Buccal Cavity and Oesophagus	530-539	186	209	787	752	·31	4·2	3·6	22	24	F.	385	1,769	68	5	79
23	Diseases of Stomach and Duodenum	540-545	288	145	4,636	1,953	1·33	16·1	13·5	50	51	M.	372	1,264	40	7	41
24	Appendicitis ...	550-553	439	401	3,310	2,820	1·24	7·5	7·0	24	22	F.	126	56	3	...	1
25	Hernia of Abdominal Cavity ...	560-561	329	183	3,178	2,105	1·06	9·7	11·5	43	45	F.	153	47	7	1	1
26	Other Diseases of Intestines and Peritoneum	570-578	533	545	5,591	6,122	2·36	10·5	11·2	24	32	M.	30	223	19	6	10
27	Diseases of Liver and Gall Bladder	580-586	161	322	2,694	5,159	1·58	16·7	16·0	61	56	F.	17	108	12	3	5
28	Diseases of Pancreas ...	587	30	30	386	449	·17	12·9	15·0	35	43	M.	317	119	1	...	2
29	Nephritis and Nephrosis ...	590-594	89	118	1,636	1,195	·57	18·4	10·1	24	28	F.	279	121	1	...	...
30	Other Diseases of Urinary System	600-609	327	397	3,617	4,283	1·59	11·1	10·8	46	38	F.	84	221	20	...	4
31	Diseases of Male Genital Organs	610-617	381	...	5,283	...	1·06	13·9	...	47	...	M.	46	122	11	1	3
32	Diseases of Breast ...	620-621	5	64	18	254	·05	3·6	4·0	45	40	F.	52	424	29	7	21
33	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	622-637	...	1,090	...	8,435	1·70	...	7·7	...	41	M.	70	407	35	13	20
34	Complications of Pregnancy ...	640-649	...	815	...	3,939	·79	...	4·8	...	25	M.	38	94	17	...	12
35	Abortion ...	650-652	...	503	...	1,837	·37	...	3·7	...	28	F.	106	189	17	2	8
36	Delivery Without Mention of Complication	660	...	2,944	...	29,652	5·97	...	10·1	...	26	M.	3	17	6	...	4
37	Delivery with Specified Complication	670-678	...	81	...	621	·13	...	7·7	...	22	F.	4	20	3	...	3
38	Complications of the Puerperium	680-689	...	17	...	243	·05	...	14·3	...	27	M.	...	68	...	2	...
39	Diseases of Skin and Cellular Tissue	690-716	508	450	7,588	6,081	2·75	14·9	13·5	34	42	F.	3	...	...	...	...
40	Arthritis and Rheumatism Except Rheumatic Fever	720-727	171	216	4,567	6,428	2·22	26·7	29·8	47	52	M.	85	406	12	1	4
41	Osteomyelitis and other Bone and Joint Diseases	730-738	380	200	4,909	4,139	1·82	12·9	20·7	31	40	F.	109	318	11	5	7
42	Other Diseases of Musculoskeletal System	740-749	141	248	1,663	2,567	·85	11·8	10·4	32	50	M.	6	143	20	2	...
43	Congenital Malformations ...	750-759	352	254	4,760	2,821	1·54	13·5	11·1	8	9	F.	10	162	41	5	1
44	Birth Injuries, Asphyxia and Inflections of Newborn	760-776	98	120	1,369	1,675	·61	14·0	14·0	1	2	M.	38	312	24	6	2
45	Symptoms Referable to Systems or Organs	780-789	1,206	1,162	10,512	10,803	4·29	8·7	9·3	36	37	M.	5	174	13	1	...
46	(Senility) and Ill-Defined Diseases	790-795	107	158	1,263	2,209	·71	11·8	14·0	48	46	F.	12	108	20	1	...
	Total		13,454	18,334	181,395	214,732	79·81	13·5	11·7	36	36		42	194	12	...	...
													20	223	89	6	14
													9	166	68	2	9
													2	72	2	...	22
													5	88	6	1	20
													106	853	134	76	37
													104	800	155	71	32
													5	62	28	1	11
													4	108	35	3	8
													4,105	22,544	3,039	727	1,373

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals
 PATIENTS DISCHARGED DURING 1965—continued

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		* Results					
			Male	Female	Male	Female		Male	Female	Sex	1	2	3	4	5		
47	Fractures of Face and Skull Bones	N800-N804	251	76	2,603	1,864	.90	10.4	24.5	27	25	M.	30	196	8	...	17
48	Fractures and Dislocations of Vertebral Column	N805-N806	70	24	13,642	969	2.94	19.5	40.4	38	46	F.	6	62	5	...	3
49	Other Fractures of Trunk, Sternum, Larynx and Pelvis	N807-N809	95	45	2,205	1,981	.84	23.2	44.0	43	52	M.	...	20	18	...	2
50	Fractures of Upper Limb	N810-N819	421	272	2,539	1,717	.86	6.0	6.3	21	27	F.	3	39	2	...	1
51	Fractures of Lower Limb	N820-N829	463	432	13,477	16,340	6.01	29.1	37.8	35	59	M.	4	403	8	...	3
52	Dislocation Without Fracture	N830-N839	110	40	1,196	303	.30	10.9	7.6	30	41	F.	11	267	1	...	12
53	Sprains and Strains	N840-N848	151	67	1,297	589	.38	8.6	8.8	31	34	M.	16	422	18	...	22
54	Head Injury (Excluding Skull Fracture)	N850-N856	1,121	459	7,330	3,596	2.20	6.5	7.8	26	26	F.	16	377	16	1	1
55	Internal Injury of Chest, Abdomen and Pelvis	N860-N869	68	20	1,126	317	.29	16.6	15.9	27	29	M.	10	89	4	...	...
56	Lacerations, Contusions and Superficial Injuries	N870-N929	811	272	5,421	1,959	1.49	6.7	7.2	24	24	F.	12	28	2	...	...
57	Effects of Foreign Body Entering through Orifice	N930-N936	74	79	226	171	.08	3.1	2.2	24	32	M.	4	60	3	...	24
58	Burns	N940-N949	192	119	3,833	2,267	1.23	20.0	19.1	18	18	F.	174	896	25	2	6
59	Injury to Nerves and Spinal Cord Without Bone Injury	N950-N959	31	6	853	46	.18	27.5	7.7	31	33	M.	51	397	3	1	3
60	Effects of Poisons	N960-N979	315	386	1,155	2,113	.66	3.7	5.5	18	27	F.	14	47	...	...	2
61	Effects of Exposure and Unspecified Injuries and Reactions	N980-N999	100	78	868	797	.34	8.7	10.2	28	44	M.	4	15	2	...	3
	Total (N Categories)		4,273	2,375	57,771	35,029	18.70	13.5	14.7	26	34		...	6	...	...	126
62	Investigations, observations and Aftercare	Y00-Y10	208	240	2,349	5,042	1.49	11.3	21.0	31	33	M.	23	135	31	1	1
	Total (Y Categories)		208	240	2,349	5,042	1.49	11.3	21.0	31	33	F.	10	176	27	26	...
	Grand Total		17,935	20,949	241,515	254,803	100.00	13.5	12.2	34	36		4,834	28,460	3,300	789	1,501

* Results : 1 — Cured
 2 — Improved
 3 — Unchanged
 4 — Investigation only
 5 — Death

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds	Average Number Days in Hospital		Average Age of Patients		Results *					
			Male	Female	Male	Female		Male	Female	Sex	1	2	3	4	5		
1	Neurosurgery, Brain and Cerebral Meninges	001-019	210	97	5,701	3,034	3.56	27.1	31.3	38	39	M.	18	100	61	2	29
2	Neurosurgery, Spinal Cord and Spinal Meninges	020-029	59	32	1,738	609	0.96	29.5	19.0	34	42	F.	6	44	41	1	5
3	Neurosurgery, Peripheral Nerves and Sympathetic System	030-049	76	39	1,376	693	0.84	18.1	17.8	44	47	M.	3	33	12	2	6
4	Thyroid and Parathyroid	070-079	10	36	66	537	0.25	6.6	14.9	34	43	F.	9	17	10	...	2
5	Adrenals	080-084	....	3	....	62	0.03	....	20.7	....	45	M.	3	57	8	1	1
6	Pituitary, Thymus and other Endocrine Organs	085-096	2	....	191	....	0.08	95.5	....	63	....	F.	3	32	4	....	....
7	Ophthalmic Operations	100-199	435	439	5,014	4,661	3.94	11.5	10.6	34	41	M.	....	....	....	....	....
8	Ear, Nose and Throat	200-249	555	377	3,988	3,771	3.16	71.9	10.0	27	31	M.	....	....	....	....	....
9	Teeth and Gums	250-259	151	172	362	417	0.32	2.4	2.4	18	20	M.	....	....	....	....	....
10	Pharynx, Tongue, Palate and Buccal Cavity	260-299	548	533	2,582	2,095	1.90	47.1	39.3	17	20	M.	....	....	....	....	....
11	Heart and Pericarioium and Intra-Thoracic Great Vessels	300-329	99	76	1,657	1,576	1.32	16.7	20.7	29	27	F.	....	....	....	....	....
12	Lung, Bronchus and Mediastinum and Collapse Therapy	330-354	230	89	4,752	2,797	3.07	20.7	31.4	49	44	M.	....	....	....	....	....
13	Operations on Breast	380-389	5	120	71	1,788	0.76	14.2	14.9	55	52	F.	....	....	....	....	....
14	Operations on Abdominal Wall	400-419	420	288	6,321	4,910	4.57	15.1	17.0	43	47	M.	....	....	....	....	....
15	Operations on Stomach	420-439	163	80	3,454	1,541	2.03	21.2	19.2	45	49	M.	....	....	....	....	....
16	Operations on Appendix	440-449	440	417	3,371	3,003	2.59	7.7	7.2	23	22	M.	....	....	....	....	....
17	Operations on Intestines (Except Appendix and Rectum)	450-469	137	154	3,065	3,687	2.75	22.4	23.9	53	60	M.	....	....	....	....	....
18	Operation on Rectum and Anus	470-499	149	107	2,113	1,604	1.51	14.2	15.0	47	47	F.	....	....	....	....	....
19	Operation on Liver and Bile Ducts	500-529	119	242	2,169	4,376	2.66	18.2	18.1	59	56	M.	....	....	....	....	....
20	Operation on Pancreas	530-539	2	1	69	26	0.04	34.5	26.0	50	65	F.	....	....	....	....	....
21	Operation on Spleen	540-549	10	7	173	152	0.13	17.3	21.7	28	39	M.	....	....	....	....	....

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals
 OPERATION CASES DISCHARGED, 1965—continued

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds	Average Number Days in Hospital		Average Age of Patients		Sex	Results *				
			Male	Female	Male	Female		Male	Female	1	2		3	4	5		
22	Operation on Kidney and Ureter	600-639	164	125	2,685	2,113	1·95	16·4	16·9	41	40	M.	22	93	23	23	3
23	Operation on Bladder and Urethra	640-669	388	196	5,410	1,911	2·98	13·9	9·8	52	47	F.	18	77	15	12	3
24	Operation on Prostrate and Seminal Vesicles	670-679	189	....	5,465	....	2·22	28·9	....	71	....	M.	37	186	69	85	11
25	Other Male Genital Organs	680-699	909	....	8,033	....	3·27	8·8	....	64	....	F.	21	80	34	60	1
26	On Ovary and Fallopian Tubes	700-719	....	168	....	1,864	0·76	....	11·1	....	....	M.	47	128	3	4	7
27	On Uterus and Supporting Structures	720-739	....	813	....	6,982	2·84	....	8·6	....	34	F.	....	....	....	....	....
28	On Vagina, Vulva and Perineum	740-759	....	370	....	4,555	1·85	....	12·3	....	43	M.	29	111	10	18	....
29	Obstetric Operations (D. and C.)	760-799	....	970	....	7,610	3·10	....	78·5	....	48	F.	100	406	85	220	2
30	Orthopaedic Surgery	800-899	1,655	1,244	38,403	29,129	27·49	....	23·4	....	27	M.	....	204	68	....	8
31	On Peripheral Blood Vessels and Lymphatic System	900-929	163	206	3,158	2,800	2·43	23·2	23·4	31	47	F.	88	....	....	....	2
32	On Skin and Subcutaneous Tissues	930-949	1,232	727	13,747	7,936	8·83	19·4	13·6	49	44	M.	209	726	4	31	....
33	Other Surgical Procedures....	950-999	475	425	7,978	6,300	5·81	11·2	10·9	32	34	F.	121	1,466	44	3	21
	Total	....	8,995	8,553	133,112	112,539	100·00	14·8	13·2	32	38		108	1,055	42	7	32
													22	80	43	6	12
													47	121	31	3	4
													230	970	27	1	4
													165	547	8	1	6
													29	354	46	2	44
													26	324	49	2	24
													3,671	11,789	1,121	582	385

* Operation cases occupied 46·94% of the total bed days. To find the percentage of total beds occupied by the various types of operation cases multiply the percentage figure in column six by the figure 0·469.

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals

ACCIDENTS, POISONINGS AND VIOLENCE, 1965

Accident	Category Inter- national Classifica- tion “E” Code	Number of Patients	Days in Hospital	Percentage of Hospital Beds Occupied	Average Age of Patients	Number Died
Railway Accidents	800-802	16	204	·05	38	2
Motor Vehicle Traffic Accidents	810-825	1,796	30,741	6·19 8·21	29	45
Motor Vehicle Non-Traffic Accidents	830-835	43	850	·17	29	2
Other Road Vehicle Accidents	840-845	134	1,092	·22	16	2
Water Transport Accidents	850-858	21	271	·05	39	....
Aircraft Accidents	860-866	2	9	·002	12	....
Accidental Poisoning	870-895	300	713	·14	60	3
Accidental Falls	900-904	1,607	25,038	5·04	37	38
Other Accidents	910-936	995	9,285	1·87	24	9
Accidents caused by Hot Substances, Corrosive or Steam Medical and Surgical Complications and Therapeutic	917	973	7,701	1·55	24	10
Misadventures	940-959	140	1,624	0·33	41	4
Late Effects of Injury	960-965	65	2,320	0·47	40	....
Suicide and Self-Inflicted Injury	970-979	396	2,531	0·51	35	11
Homicide and Assault	980-985	162	755	0·15	34	....
Total ....	....	6,650	98,134 83,134	18·76 16·74	30	126

Royal Perth, Fremantle and Princess Margaret Hospitals

ALL PATIENTS DISCHARGED

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Average Number of Days in Hospital	Daily Bed Average
Fremantle Hospital	1963	8,021	75,972	9·5	208·1
	1964	8,501	78,227	9·2	213·7
	1965	8,961	81,986	9·1	224·5
Princess Margaret Hospital	1963	7,382	49,381	6·7	135·3
	1964	6,918	45,616	6·6	124·6
	1965	7,888	54,227	6·9	148·47
Royal Perth Hospital	1963	13,283	225,673	17·0	618·3
	1964	15,478	266,503	17·2	728·2
	1965	14,677	259,433	17·7	710·3

OPERATION CASES					
Fremantle Hospital	1963	4,777	41,450	8·7	113·6
	1964	5,187	45,214	8·7	123·5
	1965	5,263	48,768	9·3	133·6
Princess Margaret Hospital	1963	2,490	19,112	7·7	52·4
	1964	2,393	17,614	7·4	48·1
	1965	2,537	19,497	7·7	53·4
Royal Perth Hospital	1963	5,792	117,072	20·2	320·7
	1964	7,448	144,850	19·4	395·8
	1965	7,085	142,698	20·1	390·7

ACCIDENTS, POISONINGS AND VIOLENCE

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Percentage of Total Hospital Beds Occupied	Number Died
Fremantle Hospital	1963	1,556	15,166	19·96	24
	1964	1,611	14,876	19·02	18
	1965	1,755	18,339	22·37	25
Princess Margaret Hospital	1963	1,346	7,979	18·88	11
	1964	1,369	8,159	17·88	9
	1965	1,598	9,122	16·82	8
Royal Perth Hospital	1963	2,837	50,277	22·26	81
	1964	3,481	58,112	21·81	105
	1965	3,219	64,908	25·02	91

King Edward Memorial and Sir Charles Gairdner Hospitals

ALL PATIENTS DISCHARGED

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Average Number of Days in Hospital	Daily Bed Average
King Edward Memorial Hospital	1964	4,584	45,716	10·0	124·9
	1965	4,969	43,433	8·7	118·9
Sir Charles Gairdner Hospital	1964	2,653	61,948	23·4	169·3
	1965	2,386	57,239	24·0	156·7

OPERATION CASES

King Edward Memorial Hospital	1964	1,014	10,188	10·0	27·8
	1965	1,254	12,325	9·8	33·7
Sir Charles Gairdner Hospital	1964	679	14,208	20·9	38·8
	1965	738	16,252	22·0	44·5

ACCIDENTS, POSIONINGS, VIOLENCE

Hospital	Year	Number Of Cases	Total Days Stay in Hospital	percent of Total Hospital Beds Occupied	Number Died
King Edward Memorial Hospital	1964	11	47	0·10	....
	1965	12	106	0·24	....
Sir Charles Gairdner Hospital	1964	99	1,125	1·82	3
	1965	66	659	1·15	2

Appendix XIX

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1962			1963			1964			1965		
	Cases Re-reported	Amend. Diag-nosis	Deaths	Cases Re-reported	Amend. Diag-nosis	Deaths	Cases Re-reported	Amend. Diag-nosis	Deaths	Cases Re-reported	Amend. Diag-nosis	Deaths
Acute Rheumatism	9	9	4 (A)	18	18	....	8	8	....	6	6	1 (A)
Amoebiasis	1	1	....	1	1	....	1	1	....	3	3	1
Ankylostomiasis	15	15	....	....	....	....	37	37	....	2	2	....
Breast Abscess	9	9	....	4	4	....	4	4	....	5	5	....
Brucellosis ....	....	....	....	7	7	....	4	4	1	3	3	....
Chorea ....	....	....	....	1	1	....	....	....	....	1	1	....
Dengue Fever ....	....	....	....	....	....	....	....	....	....	....	....	....
Diphtheria	17	17	1	5	5	....	3	3	....	2	2	....
Dysentery (Amoebic)	2	2	....	2	2	1	2	2	....	....	....	....
Dysentery (Bacillary)	179	179	5	102	102	1	135	135	6	229	229	1
Erythema Nodosum ....	....	....	....	1	1	....	....	....	....	....	....	....
Hydatid	1	1	1	....	....	....	3	3	1	2	2	....
Infantile Diarrhoea	49	49	24(B)	2	2	20(B)	44	44	23(B)	13	13	24(B)
Infective Hepatitis	115	115	2	144	144	7	100	100	3	83	83	3
Lead Poisoning	1	1	....	1	1	....	....	....	....	....	....	....
Leprosy	17	17	....	10	10	....	11	11	....	18	18	....
Leptospirosis	7	7	....	16	16	....	4	4	....	14	14	....
Malaria	3	3	....	31	31	....	5	5	....	2	2	....
Meningococcal Infection	2	2	4	4	4	1	1	1	1	2	2	4
Paratyphoid	1	1	....	3	3	....	....	....	....	3	3	....
Poliomyelitis	6	6	1	5	5	2	....	....	....	....	....	1(C)
Pleural Effusion	10	5	....	4	2	....	4	1	....	1	1	....
Puerperal Fever ....	....	....	....	4	4	....	3	3	....	1	1	....
Purulent Ophthalmia	29	29	....	36	36	....	14	14	....	1	1	....
Rubella	106	106	....	107	107	....	190	190	....	587	587	....
Salmonella Infection	61	61	1	36	36	1	61	61	1	69	69	....
Scarlet Fever	30	30	....	35	35	....	61	61	....	41	41	....
Tetanus	1	1	2	9	9	2	8	8	5	1	1	1
Trachoma	377	377	....	259	259	....	147	147	....	77	77	....
P.T.B.	275	238	24	252	216	13	225	176	20	188	152	14
Other T.B.	29	25	5	30	28	....	33	31	....	25	25	....
Typhoid Fever	5	5	....	6	6	....	....	....	....	2	2	....
Typhus Fever ....	....	....	....	2	2	....	....	....	....	....	....	....

Deaths exclude full-blood aborigines

(A) Rheumatic Fever.

(B) Gastro-Enteritis and Colotis (except ulceration) under two years and diarrhoea of the new born.

(C) Late effects of acute poliomyelitis.

Appendix XX

MATERNAL MORTALITY

Period							Average Live Births	Average Maternal Deaths	Average Rate
1901–1905	....	....	....	....	....	....	6,681	28·0	4·19
1906–1910	....	....	....	....	....	....	7,691	43·4	5·64
1911–1915	....	....	....	....	....	....	8,844	39·4	4·46
1916–1920	....	....	....	....	....	....	7,726	41·4	5·36
1921–1925	....	....	....	....	....	....	8,056	34·2	4·25
1926–1930	....	....	....	....	....	....	8,748	46·8	5·35
1931–1935	....	....	....	....	....	....	8,062	35·4	4·39
1936–1940	....	....	....	....	....	....	8,877	32·4	3·65
1941–1945	....	....	....	....	....	....	10,408	24·4	2·34
1946–1950	....	....	....	....	....	....	13,130	21·4	1·63
1951–1955	....	....	....	....	....	....	15,724	13·8	0·88
1956–1960	....	....	....	....	....	....	16,922	8·2	0·48
1961–1965	....	....	....	....	....	....	16,861	5·0	0·30

DEATHS FROM

Year	Live Births	Deaths From									
		Puerperal Septicaemia		Other Puerperal Infection		Abortion		All other Complications of Pregnancy and of the Puerperal State		All Compli- cations of Pregnancy and the Puerperal State	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1946	12,105	....	3	0·25	5	0·41	18	1·49	26	2·15	
1947	12,874	1	0·08	1	0·08	8	0·62	22	1·71	32	2·49
1948	12,981	2	0·15	4	0·31	1	0·08	13	1·00	20	1·55
1949	13,511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,228	....	....	2	0·14	1	0·07	10	0·70	13	0·91
1951	14,794	....	....	2	0·14	3	0·02	11	0·74	16	1·08
1952	15,413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15,862	....	....	....	....	1	0·06	8	0·50	9	1·57
1954	15,928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16,623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16,916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16,924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16,731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17,111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16,926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17,078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	17,064	....	....	....	....	1	0·06	4	0·23	5	0·29
1963	17,290	....	....	....	....	1	0·06	3	0·17	4	0·23
1964	16,685	....	....	....	....	3	0·18	3	0·18	6	0·36
1965	16,186	....	....	....	....	1	0·06	2	0·12	3	0·19

All Rates per thousand live births

MATERNAL MORTALITY RATES PER THOUSAND LIVE BIRTHS

Place					1960	1961	1962	1963	1964	1965
Western Australia	....	....	....	....	0.47	0.41	0.29	0.23	0.36	0.19
New Zealand (a)	....	....	....	....	0.34	0.33	(b)	(b)	(b)	(b)
New South Wales	....	....	....	....	0.68	0.50	0.34	0.32	0.34	0.32
Victoria	....	....	....	....	0.25	0.32	0.18	0.21	0.31	0.36
Queensland	....	....	....	....	0.68	0.76	0.64	0.25	0.29	0.30
Tasmania	....	....	....	....	0.45	0.33	0.33	0.23	0.24	0.40
South Australia	....	....	....	....	0.62	0.27	0.61	0.28	0.33	0.34

(a) Non-Maori (b) Not available

Appendix XXI

STILLBIRTH AND INFANT MORTALITY RATES

Year	Total Births including Stillbirths	Stillbirth Rates	Mortality Rates			Total mortality rates under one year	Total mortality rates under one year including Stillbirths	
			Under one week	Under one month	Over one month and under one year			
1946	12,398	23.1	17.1	20.6	9.6	30.3	53.4
1947	13,178	23.2	16.9	19.4	1.2	10.2	53.4
1948	13,197	20.5	16.9	18.7	8.4	25.0	45.5
1949	13,779	19.4	16.2	19.0	6.8	25.9	45.3
1950	14,468	16.6	16.2	18.0	8.6	26.7	43.3
1951	15,091	19.7	16.2	19.7	8.5	28.2	47.9
1952	15,697	18.1	15.5	17.7	6.9	24.5	42.6
1953	16,130	16.6	13.4	16.2	7.3	23.4	40.0
1954	16,198	16.7	14.2	15.8	6.4	22.2	38.9
1955	16,862	14.2	13.3	15.8	6.3	22.1	36.3
1956	17,142	13.2	13.0	15.7	6.7	22.4	35.6
1957	17,172	14.4	13.6	14.9	5.9	20.8	35.2
1958	16,956	13.3	12.8	14.2	7.1	21.2	34.5
1959	17,336	13.0	12.3	13.6	6.3	19.9	32.9
1960	17,152	13.2	13.9	15.7	5.7	21.3	34.5
1961	17,318	13.9	10.3	12.6	6.8	19.4	33.3
1962	17,267	11.8	12.6	14.3	7.7	22.0	33.8
1963	17,468	10.2	12.3	14.7	5.5	20.2	30.4
1964	16,855	10.1	11.8	12.9	6.6	19.5	29.5
1965	16,367	11.1	12.8	15.0	6.5	21.4	32.5

In above table all rates are calculated in deaths per 1,000 of total births, including stillbirths.

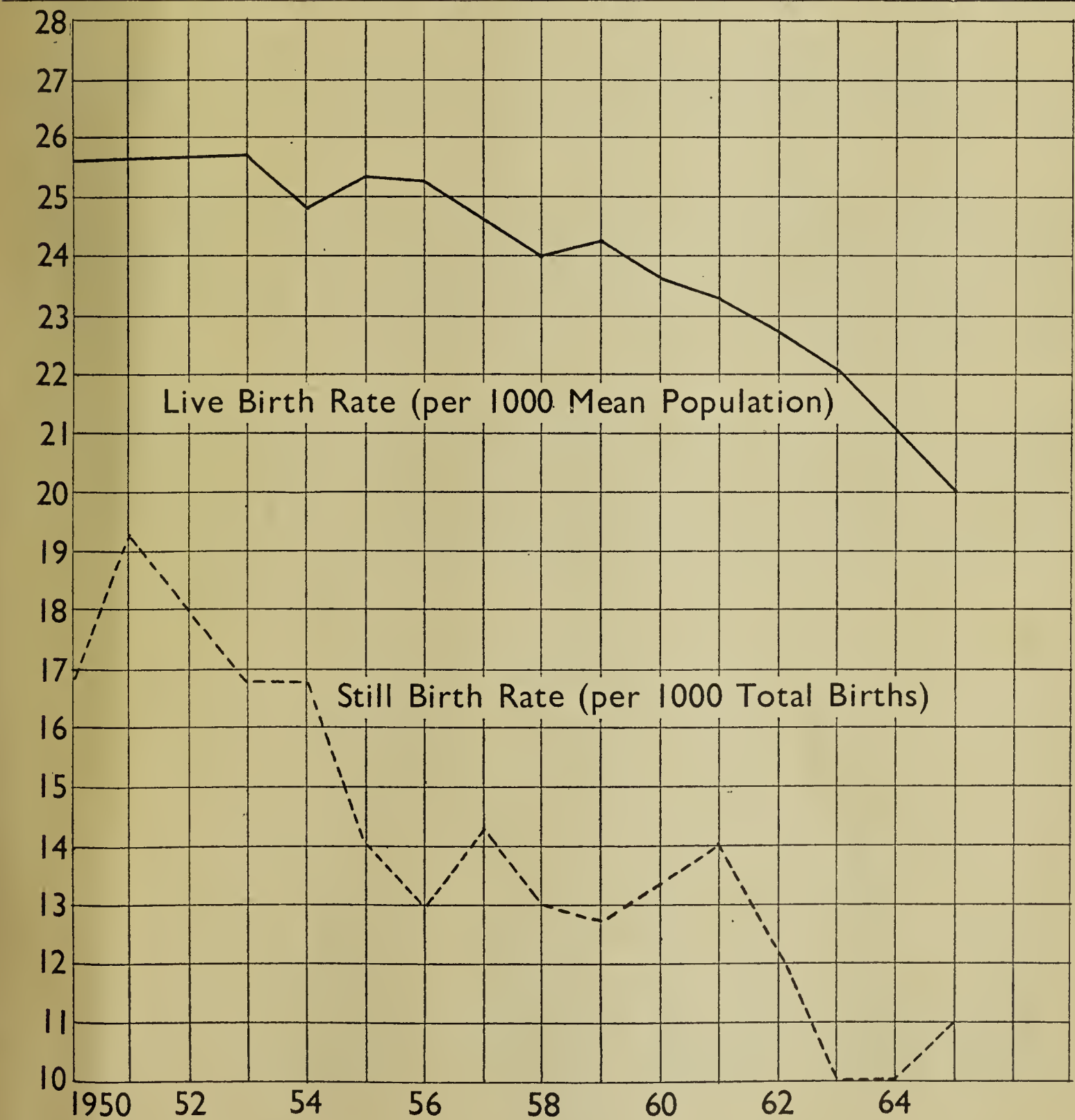
INFANT MORTALITY

Year				Births	Infant Mortality per 1,000 Live Births
1946	....	....	....	12,105	31.06
1947	....	....	....	12,874	30.92
1948	....	....	....	12,931	25.60
1949	....	....	....	13,511	26.42
1950	....	....	....	14,228	27.13
1951	....	....	....	14,794	28.73
1952	....	....	....	15,413	24.91
1953	....	....	....	15,862	23.83
1954	....	....	....	15,928	22.54
1955	....	....	....	16,623	22.44
1956	....	....	....	16,916	22.70
1957	....	....	....	16,924	21.09
1958	....	....	....	16,731	21.52
1959	....	....	....	17,111	20.16
1960	....	....	....	16,926	21.62
1961	....	....	....	17,078	19.67
1962	....	....	....	17,064	22.27
1963	....	....	....	17,290	20.42
1964	....	....	....	16,685	19.66
1965	....	....	....	16,186	21.69

Appendix XXII

WESTERN AUSTRALIA – STILLBIRTH AND BIRTH RATES

Year	Mean Population	Live Births		Stillbirths	
		Number	Rate per 1,000 Mean Population	Number	Rate per 1,000 Total Births
1950	557,878	14,228	25·50	240	16·59
1951	580,317	14,794	25·49	297	19·68
1952	600,615	15,413	25·66	284	18·09
1953	621,034	15,862	25·54	268	16·62
1954	639,963	15,928	24·89	270	16·67
1955	657,323	16,623	25·29	239	14·17
1956	674,459	16,916	25·08	226	13·18
1957	687,448	16,924	24·62	248	14·44
1958	699,915	16,731	23·90	225	13·27
1959	711,737	17,111	24·04	225	12·98
1960	722,900	16,926	23·41	226	13·18
1961	737,386	17,078	23·16	240	13·86
1962	755,259	17,064	22·59	203	11·76
1963	773,235	17,290	22·36	178	10·19
1964	790,224	16,685	21·11	170	10·09
1965	806,189	16,186	20·08	181	11·06



Appendix XXIII

Causes of Infant Mortality 1964-1966

(vide attached table)

In considering the Infant Mortality of W.A. and comparing it with the rest of Australia it is necessary to take into account along with it the Stillbirth Rate. The Infant Mortality Rate in W.A. is generally slightly above the Australian average but the Stillbirth Rate is as consistently below the Australian average. The two together bring W.A. very close to the Australian average. The difference in recording of these two rates is probably a matter of definition of signs of life in the newborn.

Figures for 1965 and 1966 show an increased Infant Mortality Rate in W.A. from 1964. This is not unexpected because the 1964 figures were exceptionally low—the lowest ever recorded. 1966 figures relate only to the first quarter of the year and therefore are of limited value in estimating what the figures for the year are likely to be.

Although quarterly figures are really too small to examine and to come to accurate conclusions, the Stillbirths and Infant Deaths in the first quarters of 1964, 1965 and 1966 have been closely studied to see if any special trends are taking place.

In the first quarters of 1964, 1965 and 1966, respectively, there were 4,047, 3,889 and 3,203 births; 42, 47 and 38 Stillbirths; and 80, 88 and 101 Infant Deaths, giving a total of Stillbirth and Infant Deaths of 122, 135 and 139. There has therefore been a slightly increased mortality and a slightly decreased number of births.

The increase in Infant Mortality has taken place entirely in the first four weeks of life and mainly in the first week. Infection has therefore played little or no part in the increase. Maternal disease or defect and complications before and during labour are the main contributors to the increase but figures are too small to justify any claims for significance in the differences. The situation however must be kept under review.

It would seem from an examination of Death Certificates that an increasing number of Natives or Part-Natives are being included in the Statistical Records. This will mean increasing difficulty in maintaining low Infant Mortality Rates. The general improvement that takes place in deaths from infection is negated by an increased recording of deaths of part-natives from respiratory and intestinal diseases. In the three quarters examined 43 deaths of infants were due to infectious disease of which no less than 17 were part-natives. In 1964 only eight out of 122 deaths or stillbirths were considered to be part natives, whereas in 1966 they numbered 18 out of 139, or 13 percent of the total. This is out of all proportion to their numbers in the community.

About 30 percent of country children are actually born in the metropolitan area and those that are stillborn or die in the early weeks, die in metropolitan hospitals. The larger number of deaths that take place in the metropolitan area is due to this. When allowance is made for the preponderance of part-natives in country areas there appears to be little difference in death rates between country and metropolitan areas. Hospitals in the latter will, however, be dealing with a larger number of specially difficult cases.

To lower our Infant Mortality Rate it would appear that we will have to concentrate on causes of death in the newborn and on the infectious diseases of the native and part-native population.

W. S. DAVIDSON

CAUSES OF INFANT MORTALITY
PERIOD 1st QUARTER (J.F.M.) OF EACH YEAR
AGE AT DEATH (VIZ)

Cause of Death	Stillborn			0-1 Hour			1 hr.(+)-24 hrs.			24hrs. (+)- 7 days			8 days-28 days			29 days-1 year			Totals		
	1964		1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	Total (N)	
1. <i>Maternal Disease or Defect</i> :-																					
Maternal Injury	1																			1	
Maternal Nephritis			1																	1	
Pre-eclampsia and Toxaemia	1	7	5																	23	
Contracted Pelvis (M)		1																		1	
Incompetent Os.	3	1					1													3	
Maternal Hypertension																				1	
Total	5	9	6			2	1	4	3	1	2	4					7	15	15	37	
2. <i>Placental or Cord Defect</i> :-																					
Compression of Cord	6	12	6																	34 (1)	
Ante Partum Haemorrhage	7	4	1				2													22 (2)	
Placental Praevia		1	1			2	1	1	2	1	1	1								12	
Defect of Placenta	3	4	7				2	3	1											20	
Total	16	21	15	2	2	2	5	6	12	1	2	3					24	32	32	88 (3)	
3. <i>Complications of Labour</i> :-																					
Precipitate Labour	4		1			1														4	
Breech																				1	
Hydramnios		2									1						5	1	2	7 (1)	
Multiple Birth		3	3				2	8	6			1					3	13	9	4	
Prolonged Labour							1		1	2							4		1	25 (6)	
Total	4	5	4	3	2	1	3	8	9	2	1	3					12	16	17	5 (1)	
4. <i>Foetal Defects or Complications</i> :-																					
Erythroblastosis Foetalis	4	1	1				1	1												9	
Prematurity	3	1	1			2	13	10	13	4	8	4								66 (6)	
Malformation	2	4	9				3	1	3	4	3	3				2				20	
Anoxia		2	2				1					1								22	
Atelectasis							1	1									1	1		3	
Intrauterine Infection																				2	
Large Baby	1										2									4 (1)	
Cerebral Haemorrhage																				1	
Neonatal Hepatitis																				1	
Total	10	8	13	3	1	2	19	13	18	8	14	8					45	51	49	145 (9)	

Cause of Death	Stillborn			0-1 Hour			1 hr.(+)-24 hrs.			24 hrs.(+)-7 days			8 days-28 days			29 days-1 year			Totals			
	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	1964	1965	1966	Total (N)
5. <i>Infectious Disease in Infants</i> :—																						
Gastroenteritis																						1
Septicaemia																						3
Pneumonia and Bronchopneumonia																						9
Acute Bronchitis or Respiratory Infection																						1
Bronchiectasis																						2
Acute Nephritis																						1
Meningitis																						1
Total							1									11	9		14	13	16	43 (17)
6. <i>Accident or Non-Infectious Disease in Infants</i> :—																						
Volvulus																						2
Duodenal Atresia																						3 (1)
Asphyxia in cot or bed							1															1
Aspiration Pneumonia																						1
Asphyxia from vomitus																						3
Status Epilepticus																						1
Motor Vehicle Accident																						2
Progressive Spinal Musc. Atrophy																						1
Dehydration																						1
Drowning																						1 (1)
Paralyticileus																						1
Heat Stroke																						1
Total							1									10	3		13	3	10	26 (5)
7. <i>Miscellaneous</i> :—																						
Unknown	7	4																				11
Homicide																						1
Total	7	4																				12
Grand Total	42	47	38	8	5	7	30	31	42	13	19	20	5	11	10	23	22		122 (8)	135 (16)	139 (18)	396 (42)
* Country	16	17	7	5	5	4	14	14	21	3	6	6		1	3	15	7	12	53 (5)	50 (14)	53 (14)	156 (33)
* Metropolitan	26	30	31	3	0	3	16	17	21	10	13	14	5	10	7	9	15	10	69 (3)	85 (2)	86 (4)	240 (9)

* These are uncorrected for place of normal residence and therefore indicate where the child died.

(N) Figures in brackets are part-native babies included in total.

Appendix XXIV

MEAT INSPECTION FOR THE YEAR ENDED 31st DECEMBER, 1965

Number and Type of Animals Slaughtered		Carcases Condemned for—							Part Carcases Condemned for—						Organs Condemned for—							
		Tuber- culosis	Actino- mycosis	Piroplas- mosis	Caseous Lympho- denitis	Para- typhoid	Trau- matic and Septic Conditions	Pleuro- Pneu- monia	Other Abnorm- alities	Total Carcases Con- demned	Actino- mycosis	Caseous Lympho- denitis	Tuber- culosis	Arth- ritis	Other Abnorm- alities	Total Part Car- cases Con- demned	Actino- mycosis	Echino- coccus Granul- osus	Pleuro- Pneu- monia	Tuber- culosis	Other Abnorm- alities	Total Organs Con- demned
<i>Robb's Jetty (including Watson's and Anchorage Butchers)</i>																						
Cattle	21,809	25	...	3	...	...	39	...	19	86	...	...	...	...	14	14	833	35	...	6	2,109	2,983
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	197,314	...	...	...	51	...	337	...	170	558	...	...	448	...	10	900	...	...	...	...	16,428	16,441
Pigs	91,078	34	...	...	...	134	135	...	262	565	...	905	824	7,464	9,193	...	...	...	...	7	93,769	93,771
<i>Midland Junction</i>																						
Cattle	53,827	38	...	...	...	...	85	...	96	219	1,008	51	...	130	1,189	4	432	...	...	58	4,462	4,956
Calves	4,293	...	...	...	...	...	...	...	18	...	...	...	...	2	2	...	...	...	...	...	...	...
Sheep	564,388	...	...	...	18	...	18	...	6,197	6,233	...	...	895	48	1,271	...	...	...	...	...	12,940	12,940
Pigs	55,418	3	...	...	12	17	20	...	27	79	...	311	151	216	678	...	...	...	...	...	6,294	6,294
<i>Kalgoorlie</i>																						
Cattle	2,361	...	1	...	...	...	...	...	3	4	4	1	3	12	20	...	...	...	...	5	44	48
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	20,047	...	...	...	4	...	...	...	34	38	...	...	28	14	82	...	...	...	...	...	998	1,007
Pigs	2,295	...	...	...	...	...	1	...	4	5	...	16	3	2	21	...	...	...	...	...	85	87
<i>Perth Meat Markets</i>																						
Cattle	868	...	...	...	...	...	8	...	6	14	...	...	...	1	1	...	...	...	...	...	62	62
Calves	4,671	...	...	...	...	...	1	...	36	37	...	...	...	...	...	...	...	...	...	...	18	18
Sheep	48	...	...	...	...	...	...	...	16	...	...	...	...	...	...	...	...	...	...	...	...	...
Pigs	38	2	...	...	...	5	1	...	2	10	...	...	...	...	...	...	...	4	...	...	29	33
<i>Fremantle Meat Markets</i>																						
Cattle	140	...	...	...	...	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...
Calves	865	...	...	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pigs	103	...	...	...	...	2	...	...	...	2	...	1	...	...	1	...	...	...	...	...	...	...
<i>* Country Districts</i>																						
Cattle	46,831	20	...	...	...	...	77	...	27	124	98	62	10	77	247	188	307	...	...	32	1,260	1,787
Calves	8,758	...	...	...	...	...	16	...	118	134	...	...	2	4	6	...	...	...	...	...	23	23
Sheep	228,401	...	...	...	39	...	145	...	588	772	...	...	386	144	768	...	574	...	...	...	10,005	10,579
Pigs	15,573	25	...	...	...	22	22	...	13	82	...	250	86	78	414	7	27	...	...	91	2,205	2,330

Totals—
Cattle ... 125,836
Calves ... 18,587
Sheep ... 1,019,205
Pigs ... 164,510

* Country Districts included the following centres :—Bunbury, Busselton, Collie, Central S.W. Regional Health Scheme (Capel, Dardanup, Donnybrook), Esperance, Geraldton, Harvey, Katanning, Mandurah, Manjimup, Merredin, Narrogin, Northam, Plantagenet, Upper Blackwood, Wagin, Waroona.

Appendix XXV

REVENUE, 1965

	£	\$
Laboratory Fees	113,141 =	226,282
Infant Health Contributions, etc.	7,850 =	15,700
Dental Fees—North West Clinics	5,767 =	11,534
Tuberculosis—		
Commonwealth Capital Recoups	2,742 =	5,484
Commonwealth Maintenance Recoups	385,871 =	771,742
Administration Charges, etc.	19,039 =	38,078
Other	13,976 =	27,952
Derby Leprosarium—		
Maintenance Fees, Commonwealth Benefits, etc.	37,958 =	75,916
North West Health Inspector Schemes	1,518 =	3,036
Nurses' Registration Board Examination and Registration Fees	3,620 =	7,240
Poisons Licences	1,307 =	2,614
Septic Tank Fees	19,530 =	39,060
Public Buildings Inspection Fees	571 =	1,142
Private Hospitals Licences	1,065 =	2,130
Branding Fees—		
Fish	1,241 =	2,482
Meat	21,166 =	42,332
Perth Medical Officer's Fees	1,986 =	3,972
Generally	8,664 =	17,328
Total	<u>647,012 =</u>	<u>1,294,024</u>

EXPENDITURE, 1965

	£	\$
Salaries and Wages	740,456 =	1,480,912
Laboratory Services	99,236 =	198,472
Infant Health Service	25,689 =	51,378
Schools Medical Service	6,144 =	12,288
Schools Dental Service—		
Generally	24,533 =	49,066
North West Clinics	8,302 =	16,604
Subsidy Perth Dental Hospital Mobile Units	11,228 =	22,456
Bursaries	19,155 =	38,310
Tuberculosis—		
Generally	106,802 =	213,604
Recoup to Sir Charles Gairdner Hospital	301,724 =	603,448
Leprosy....	41,868 =	83,736
Poliomyelitis	21,186 =	42,372
Venereal Diseases	4,554 =	9,108
Medical and Nutritional Survey of Natives and Ophthalmic Survey	5,900 =	11,800
North West Health Inspector Schemes	2,916 =	5,832
Nurses' Registration Board	3,421 =	6,842
Physiotherapy and Speech Therapy Bursaries	3,103 =	6,206
Clean Air Act and Poisons Committee Fees, etc.	247 =	494
Septic Tank Inspection Fees	9,590 =	19,180
Sanitation of Government Buildings	9,978 =	19,956
Generally	27,482 =	54,964
Total	<u>1,473,514 =</u>	<u>2,947,028</u>

HEALTH—REVENUE

	1/7 to 31/12/64 £	1/7/64 to 30/6/65 £	Net 1/1 to 30/6/65 £	1/7 to 31/12/65 £	Total 1/1 to 31/12/65 £
Laboratory Fees	58,951	114,127	55,176	57,965	113,141
Infant Health Contributions etc.	4,552	7,317	2,765	5,085	7,850
Dental Fees—North West Clinics	1,529	3,310	1,781	3,986	5,767
Tuberculosis—					
Commonwealth Capital Recoups....	879	3,621	2,742	....	2,742
Commonwealth Maintenance Recoups	107,484	367,567	260,083	125,788	385,871
Administration Charges etc.	....	19,039	19,039	....	19,039
Other....	3,964	12,784	8,820	5,156	13,976
Derby Leprosarium—Maintenance Fees, Commonwealth Benefits etc.	15,754	35,632	19,878	18,080	37,958
North West Health Inspectors Schemes	407	1,241	834	684	1,518
N.R.B. Examination and Registration Fees	1,269	3,028	1,759	1,861	3,620
Poisons Licences	....	....	....	1,307	1,307
Septic Tank Fees	10,405	20,113	9,708	9,822	19,530
Public Buildings Inspection Fees	1,033	989	Dr. 44	615	571
Private Hospitals Licences	737	989	252	813	1,065
Branding Fees—					
Fish	748	1,356	608	633	1,241
Meat	9,821	18,500	8,679	12,487	21,166
Perth M.O. Fees....	831	2,004	1,173	813	1,986
Generally	3,939	9,479	5,540	3,124	8,664
Total	222,303	621,096	398,793	248,219	647,012

HEALTH—EXPENDITURE

								1/7 to 31/12/64 £	1/7/64 to 30/6/65 £	Net 1/1 to 30/6/65 £	1/7 to 31/12/65 £	Total 1/1 to 31/12/65 £	
Salaries—													
North West		....	....	....	....	....	....	21,041	41,673	....	25,031	....
Generally		....	....	....	....	....	....	226,119	458,482	....	248,504	....
Infant Health		....	....	....	....	....	....	62,898	117,989	....	66,772	....
Tuberculosis		....	....	....	....	....	....	45,321	91,312	....	46,072	....
Total							
								355,379	709,456	354,077	386,379	740,456	
Laboratory Services—													
North West		....	....	....	....	....	....	498	1,194	....	218	....
Generally		....	....	....	....	....	....	36,393	90,496	....	44,219	....
Total							
								36,891	91,690	54,799	44,437	99,236	
Infant Health Service		....	....	....	....	....	....	13,380	25,556	12,176	13,513	25,689
Schools Medical Service		....	....	....	....	....	....	3,032	6,250	3,218	2,926	6,144
Schools Dental Service—													
Generally		....	....	....	....	....	....	10,706	25,070	14,364	10,169	24,533
North West Clinics		....	....	....	....	....	....	2,636	5,511	2,875	5,427	8,302
Subsidy P.H.D.		....	....	....	....	....	....	{ 8,190	12,940	4,750	6,478	11,228
Mobile Units		....	....	....	....	....	....
Bursaries		....	....	....	....	....	....	Cr.1,360	12,867	14,227	4,928	19,155
Total							
								20,172	56,388	....	27,002	....
Tuberculosis—Generally		....	....	....	....	....	....	41,782	95,540	53,758	53,044	106,802
Recoup to S.C.G. Hospital		....	....	....	....	....	....	88,294	268,989	180,695	121,029	301,724
Leprosy		....	....	....	....	....	....	{ 133	133			
			16,872	41,569	24,697	17,171	41,868
Polio		....	....	....	....	....	....	9,726	19,446	9,720	11,466	21,186
Venereal Disease....		....	....	....	....	....	....	2,299	3,769	1,470	3,084	4,554
Medical and Nutritional		....	....	....	....	....	....	{ 4,226	6,052	1,826	4,074	5,900
Survey of Natives and Opthalmic Survey		....	....	....	....	....	....
North West Health Inspector Schemes		....	....	....	....	....	....	1,108	1,781	673	2,243	2,916
Nurses' Registration Board		....	....	....	....	....	....	762	2,325	1,563	1,858	3,421
Physiotherapy and Speech Therapy Bursaries		....	....	....	....	....	....	1,097	3,388	2,291	812	3,103
Clean Air Act and Poisons Committee Fees, etc.		....	....	....	....	....	....	....	....	....	247	247
Septic Tank Inspection Fees		....	....	....	....	....	....	3,502	9,209	5,707	3,883	9,590
Sanitation of Government Buildings		....	....	....	....	....	....	7,150	10,190	3,040	6,938	9,978
Generally—													
North West		....	....	....	....	....	....	Cr. 62	Cr. 48	....	Cr. 37	....
Others		....	....	....	....	....	....	8,602	23,217	....	12,890	....
Total							
								8,540	23,169	14,629	12,853	27,482	
Grand Total							
								614,345	1,374,900	760,555	712,959	1,473,514	

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